JULY 1961

The American City

A Buttenheim Publication

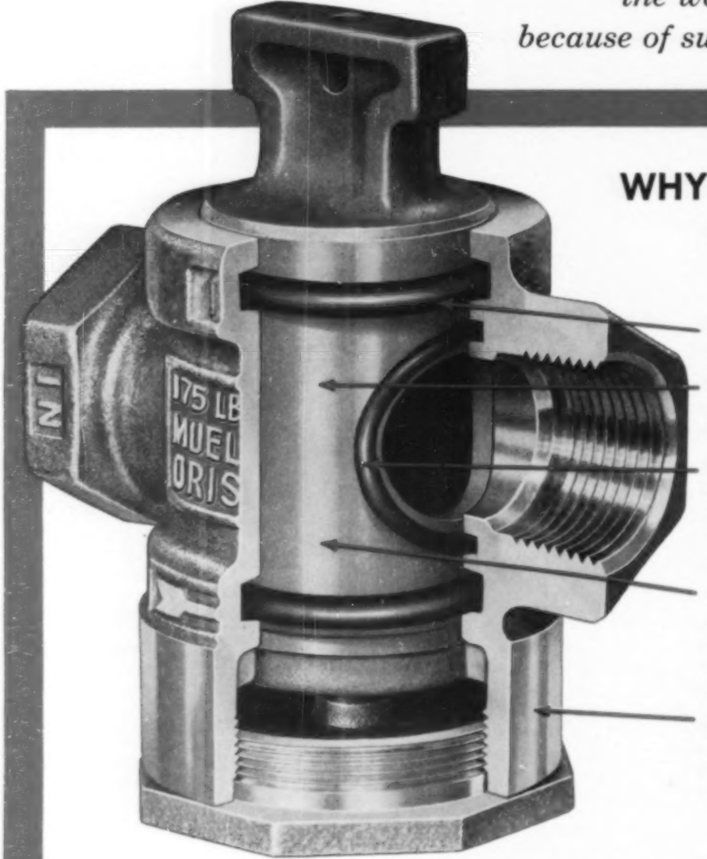
ELK'S CRIPPLED
CHILDREN'S APPEAL
POLICE
GMC
NEWARK POLIC
EMERGENCY

Police Director Joseph F. Weldon explains the Newark, N. J., transistorized two-way radio system to Mayor Leo P. Carlin (center) and Mariano J. Rinaldi, City Administrator (left). This is the first of its type in the nation. See page 3.

ORISEAL®

by MUELLER®

Introduced one year ago . . .
today recognized as the lifetime curb valve by
the water works industry
because of superior features!



WHY? *Lifetime easy turning action . . . lifetime positive sealing action!*

Top and Bottom O-rings—provide positive pressure sealing without mechanical means.

Straight, Balanced Pressure Plug—O-rings of equal size at top and bottom eliminate end thrust, contribute to turning ease.

Port O-ring—in a specially designed groove in the body provides maximum support for O-ring, preventing major cause of damage to O-ring. Seating action gives positive pressure sealing and long life.

"Teflon"* coated Plug—prevents "sticking" or "freezing", even after long periods of idleness. "Teflon", an inert material having a very slick surface, eliminates the necessity of periodic lubrication or maintenance.

Strong Cast Brass Body—of extra strength and with heavy-duty check lugs, enables the Oriseal body to withstand all normal operating and installation stresses.

*Registered trademark of the DuPont Company.

TEST . . . an Oriseal Curb Valve in *your* system. Check the positive sealing and easy turning qualities that have made this the *lifetime* curb valve. See your Mueller representative or write for illustrated folder and test report on the Oriseal Curb Valve.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

6258

JULY 1961

The
American City
A Buttenheim Publication

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

ADMINISTRATION, GOVERNMENT, AND PURCHASING

Scorecard for the 87th Congress 5
Our municipal notebook 9
Municipal public relations 139
How Phoenix makes 12,000 purchases 143
Electronic data processing 161
Purchasing news 183

STREET CONSTRUCTION AND MAINTENANCE
STREET CLEANING

Polymer blend improves asphalt qualities 11
Subdivision street requirements 11
Daily flushing cleans streets 20
A sweeping start 20
Street cleaning in a 24-hour-a-day city 93
New type of seal coating 97

OUTDOOR LIGHTING

Alabama towns get brighter and brighter 131
San Antonio's aorta 132
Cleveland's square is a super-moon 135
Mercury luminaire for secondary streets 135
Olympians pleased with aluminum standards 137
Kids keep on playing at night 137

SEWERAGE AND SEWAGE PURIFICATION

Sewer cleaning by contract pays off 23
It smells—or does it? 23
How to build sewers for tomorrow's growth 100
Ground garbage in a sewerage system 108

TRAFFIC CONTROL

Fast figuring of parking charges 120
Modern rapid-transit system 123
All-night parking on Milwaukee streets 125
Inspection trip 125
6,400 miles of traffic lines per year 126
Cities' plans for traffic signal systems 126
Elevator parking on Biscayne Boulevard 129

REFUSE COLLECTION AND DISPOSAL

Landfill provides garage site 25
48 trucks serve 56,800 dwellings 25
A residential incineration program 98
Mount Holly's refuse program 118

PLANNING, ZONING, AND HOUSING

Philadelphia's long-range plans 89
How Sacramento develops deep lots 116

WATER SUPPLY AND TREATMENT

The answers to water-works problems 33
Underwater line feeds a dozen towns 94
Water for your grandchildren 113
Major distribution valves replaced 153

PUBLIC SAFETY

The Dallas fire department at 75 26
Microwave pole tops city hall 26
Transistorized-radio network 104
Miami gets ultra-modern jail 107
Running a small police force 112
Municipal communications keep up to date 117

AIR POLLUTION

Air pollution control news 43

PARKS AND PLAYGROUNDS

Real tigers for toy ones 28
Are your cemetery rates too low? 28
Plans new golf course 28
Electronic hotfoot eliminates bugs 103

DEPARTMENTS

Letters to the editor 19
Editorial 7
Free catalogs 47
Legal notes 169
Zoning and planning decisions 167
City managers 171
Conventions: when and where 173
Municipal and civic publications 179
Municipal bond market 181
About people 192
Professional service directory 195

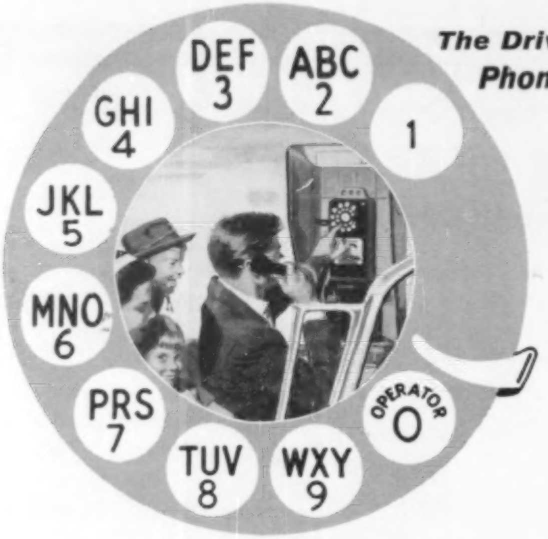
(*For index to advertisers see page* 207)

The Cover Picture

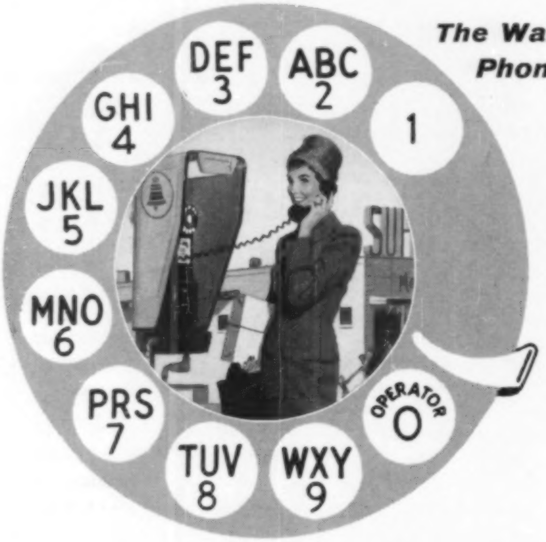
The American City

When Newark, N. J., converted its two-way radio system to completely transistorized equipment, Mayor Leo P. Carlin and Police Director Joseph F. Weldon set something of a precedent for major cities. In the story on this change-over (Transistorized-Radio Network, p. 104-6), Newark's Business Administrator Mariano J. Rinaldi explains why the city had to move quickly to make the installation. He also lists the advantages that the new system has over the old, and the possibilities of enlarging it.

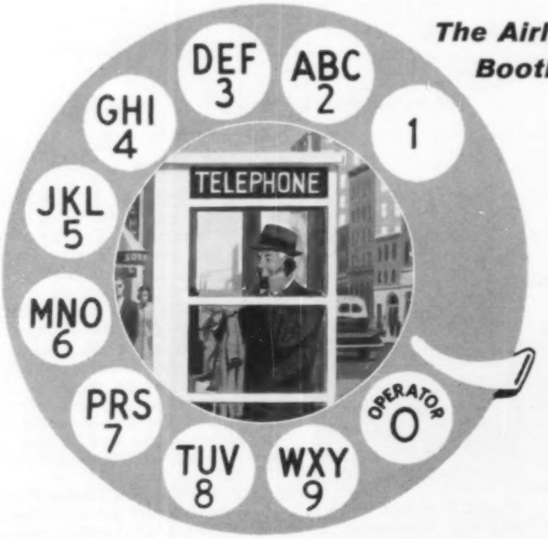
The cover shows Mayor Carlin, Police Director Weldon and Administrator Rinaldi inspecting the equipment used on a police emergency vehicle.


ABC 2
DEF 3
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
1
OPERATOR O

The Drive-Up Phone


ABC 2
DEF 3
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
1
OPERATOR O

The Walk-Up Phone


ABC 2
DEF 3
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
1
OPERATOR O
TELEPHONE

The Airlight Booth

THE BUSIEST WHEELS IN YOUR CITY

Every day, hundreds of your citizens must make phone calls when they are away from their office or home. Often, their search for a building with a phone booth takes them many blocks and many minutes.

To solve this problem, progressive cities all over our nation have had planned networks of new outdoor telephones installed on their public property.

These outdoor telephones not only give 24-hour service and protection, they also add extra revenue to your city's treasury—without adding one cent to your municipal tax burden.

Learn how outdoor telephones can serve your city profitably. Call your local Bell Telephone manager. He'll be pleased to arrange for a prompt, custom-designed telephone plan for your city.

BELL TELEPHONE SYSTEM

Volume 76 Number 7

The
American City

WILLIAM S. FOSTER, *Editor*
ALDEN W. WELCH, *Research Editor*
ELROY F. SPITZER, *Engineering Editor*
RODNEY R. FLEMING, *Associate Editor*
SHEILA C. MALTON, *New Products Editor*
WILLIAM T. DULAC, *Production Manager*
WILLIAM DE R. TAAFFE, *Asst. Prod. Mgr.*

Editorial and Executive Offices:

470 PARK AVE. SOUTH, NEW YORK 16
MURRAY HILL 5-9250
EDGAR J. BUTTENHEIM
Chairman of the Board
DONALD V. BUTTENHEIM, *President*
GEORGE S. CONOVER, *Vice President*
EDGAR M. BUTTENHEIM, *Publisher*
ARTHUR B. BURGAN, *Assistant Publisher*
G. E. CARNEY, *Treasurer*

Sales Offices:

NEW YORK 16 • 470 PARK AVE. SOUTH
MURRAY HILL 5-9250
MYRON MACLEOD, *Advertising Manager*

CHICAGO 6 • 400 WEST MADISON ST.
FINANCIAL 6-4611
WARNER H. ROBINSON
TED K. ASHMOS

CLEVELAND 14 • 1814 SUPERIOR BLDG.
CHERRY 1-1755
FRED SCHENCK

LOOKOUT MOUNTAIN 8, TENN.
121 NORTH HERMITAGE
TAYLOR 1-2853
CURTIS R. BUTTENHEIM
Southern Sales Manager

LOS ANGELES 27 • 1870 HILLHURST AVE.
NORMANDY 5-5143
ALBERT T. MILLER, *Pacific Coast Mgr.*
JAMES F. MURPHY

THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature. Copyright, 1961, by Buttenheim Publishing Corporation, 470 Park Avenue South, New York 16, New York.

ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS
OVERVIEW
Municipal Index
MART
AMERICAN SCHOOL AND UNIVERSITY

Municipal Scorecard For the 87th Congress

While President Kennedy's program for the nation's urban areas can't compare, headline-wise, either with his meeting with Premier Khruschev or his lame back, nevertheless it is chalking up progress. Here are some of the highlights:

Department of Urban Affairs

—has had plenty of supporters and little opposition. The National Association of Real Estate Boards has expressed concern that, under such a department, FHA would lose its separate corporate identity. However, the National Association of Home Builders endorses the measure, as does the American Municipal Association, the U. S. Conference of Mayors, and others. The National Retail Merchants Association accepts it as an accomplished fact.

Urban Renewal, Slum Clearance, Housing

—already has Senate approval. The current bill will provide $2½ billion for urban-renewal grants over the next four years, instead of making funds available on an annual basis. This is a substantial increase. From 1949, when the program started, to 1960, Congress authorized only $2 million. The bill will also permit relocation grants exceeding the current $200 to individuals and $3,000 to business; however two thirds will come from federal funds and one third from local. It provides an additional authorization for 100,000 units of low-rent public housing, liberalization of the FHA home-improvement program, federal participation in open-space acquisition and various other features.

Senator Williams' bill to encourage providing open space in urban areas was killed in the Senate amid some oratorical fluorishes.

Stream Pollution Abatement

—is going to require a summit conference between Senator Kerr and Representative Blatnik; each one has introduced a bill in his branch of Congress and each one feels that his bill is just what the country needs.

Representative Blatnik would authorize $100,000,000 a year in grants for sewage works and would liberalize the payments to the cities. He also would reallocate funds after 18 months, drawing from states that haven't used their allotments and giving to those that could use more.

Senator Kerr would authorize $70,000,000 the first year, gradually increasing to $100,000,000 over a period of five years, and then return to Congress for re-authorization of the program. He also would reallocate funds, but after 24 months instead of 18.

Representative Blatnik also would revise the enforcement measures. He proposed, on intrastate waters, to empower the federal government to enforce corrective measures on the request of the state water-pollution-control agency, or of the governor of the state, or at the request of a municipality with the concurrence of the state water-pollution-control agency. He provides means for the secretary of the Department of Health, Education and Welfare to issue an order with the force of law unless appealed in 60 days.

Senator Kerr would permit HEW to enter an intrastate situation on request of the governor. He would not permit the Secretary of HEW to go to court on these matters without the consent of the state.

The Blatnik proposal has passed the House of Representatives, and the Kerr bill is out of committee hearings. So rather soon, both will have to reconcile differences.

Mass Transit

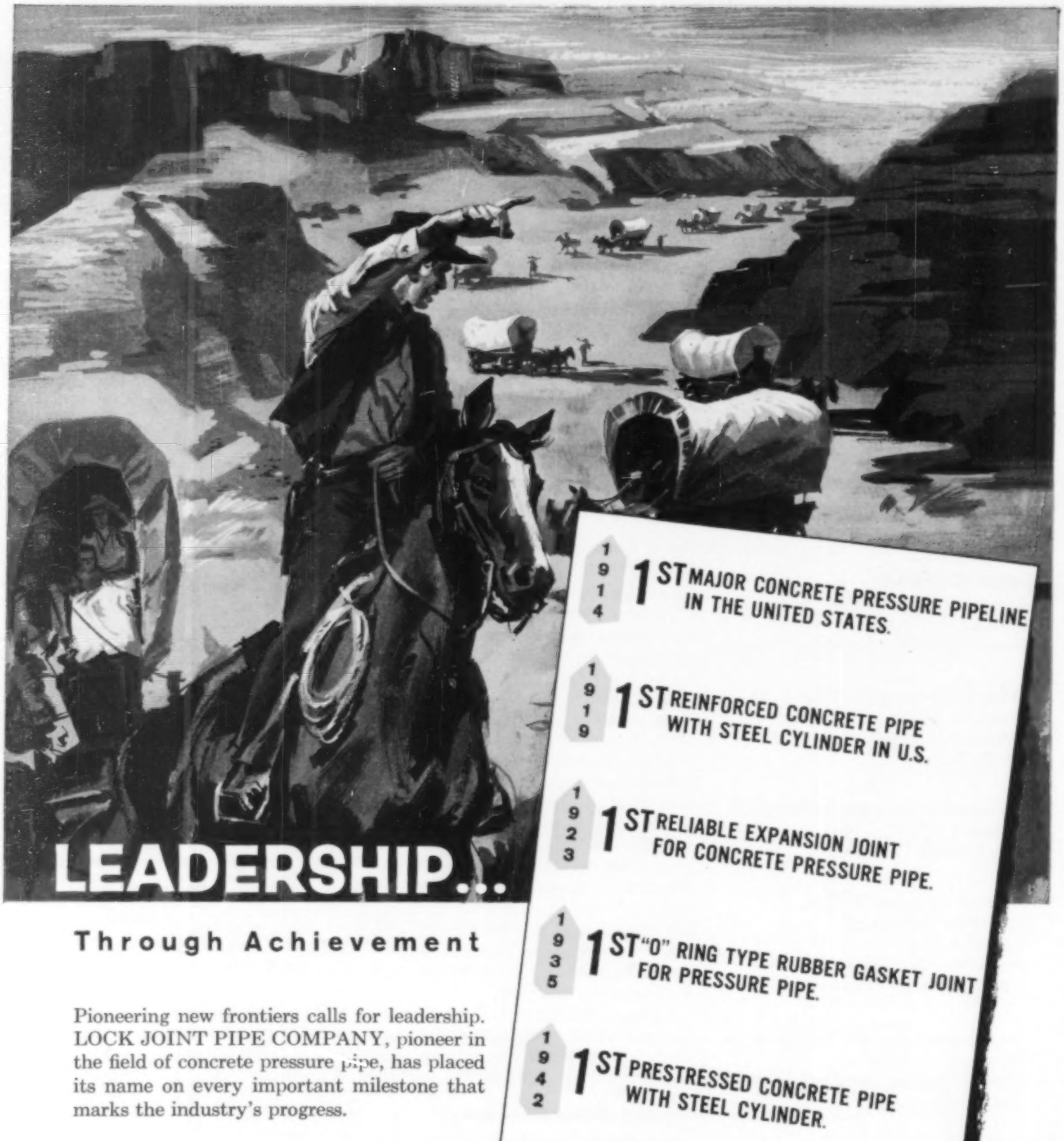
While Senator Williams has won strong support for his bill that many have labeled as a "break-through in the solution of the urban-transportation program," the Administration seems only mildly interested. Current legislation passed by the Senate allocates $100,000,000 for mass transit, not requested by President Kennedy, who asked only that a study be made. The Public Administration Service is undertaking this.

To add to the lack of Congressional interest in mass transit, the House cut $125,000 out of the budget of the Washington, D. C. Transportation Agency. The money was going to finance plans for a subway system.

Civil Defense

—gets a little more interested eye from the Administration. President Kennedy would like to establish an Office of Emergency Planning in the Executive Office of the President. He would like to have the Air Force assume full responsibility for all air-raid warnings, and the General Services Administration, all communication activities.

His advisers apparently are arguing over the type of shelter program to be adopted, if any, and Congress seems opposed to any appropriation for fallout shelters. ◄◄



LEADERSHIP...

Through Achievement

Pioneering new frontiers calls for leadership. LOCK JOINT PIPE COMPANY, pioneer in the field of concrete pressure pipe, has placed its name on every important milestone that marks the industry's progress.

1914 **1ST** MAJOR CONCRETE PRESSURE PIPELINE IN THE UNITED STATES.

1919 **1ST** REINFORCED CONCRETE PIPE WITH STEEL CYLINDER IN U.S.

1923 **1ST** RELIABLE EXPANSION JOINT FOR CONCRETE PRESSURE PIPE.

1935 **1ST** "O" RING TYPE RUBBER GASKET JOINT FOR PRESSURE PIPE.

1942 **1ST** PRESTRESSED CONCRETE PIPE WITH STEEL CYLINDER.

1961 **NOW**— a new, NON-CYLINDER prestressed concrete pressure pipe—product of 56 years experience in the manufacture of concrete pipe, and developed through 24 years of research and 10 years of service testing in actual water works systems.

For information, write for the brochure on:

LOCK JOINT PRESTRESSED CONCRETE PRESSURE PIPE

Lock Joint Pipe Co. • East Orange, N. J.

Member of The American Concrete Pipe Association and The American Concrete Pressure Pipe Association

Kitchen of Democracy

One of the bits of Americana that we miss at this time of year is the old Fourth-of-July picnic and speech—especially the speech.

The picnic was fun. You got together with your neighbors, held three-legged races, sack races, ball games, and had plenty to eat, but the speech topped the whole day's events. When it was over, you again realized that you lived in an unusual nation, striving hard to create a lasting society that recognizes the rights and dignity of the individual.

Unfortunately, the speed and flexibility of the motor car, the fascination of television, and other distractions have all but eliminated the need for the old community picnic. Then someone discovered Samuel Johnson's annoyed, acidulous quip, "Patriotism, the last refuge of scoundrels," and thought he meant that the message of these old orators really wasn't proper.

Nevertheless, since this is the month when we celebrate our nation's independence, we feel it appropriate to remind ourselves that while we don't have the picnics, we do have a society determined to make democracy work. As we recall it, those old orators didn't plead for blind patriotism. But they did stand stoutly for a democratic government that receives its power from the consent of the governed, expressed through a secret ballot.

Last year, at the U. S. Conference of Mayors' meeting in Chicago, a Canadian city attorney leaned over his table and shook his finger at us. "The trouble with you Americans," he said, and we instinctively started to duck, "is that you just don't realize what a great people you are. Every time I get discouraged about the democratic process, I find a reason to run over to your side of the border. Then I go back, resolved that if you can make democracy work as well as you have, by heaven we can also."

The essence of that democracy is in our independent local governments. Congressman Jim Wright, former mayor of Weatherford, Texas, labelled them, "Democracy's Kitchens," and properly so. The long and degrading history of dictatorships, all advocating some kind of "ism," shows that when dictators replace democracy, independent local government disappears.

The police force appointed by and responsible to these local governments probably is even more an evidence of democracy at work. Last month, in Washington, mayors from all over the world gathered at the meeting of the International Union of Local Authorities. We overheard one of them questioning a U. S. mayor.

"And who appoints your chief of police?"

"The mayor and council make this appointment."

"Subject to the approval by the state?"

"No. This is our appointment alone."*

"But he reports to the state?"

"No, he reports to the mayor and council."

There was a pause, and then came the observation, "This is very good."

Mayor Tom Lemon, Bloomington, Ind., found himself discussing local government with a group of Southeast Asian city officials. One of them raised the question of how he was addressed. "Generally," Mayor Lemon replied, "they call me Tom." All smiled.

"In our country," said one of them, "we are trying to adopt the principle of independent local governments such as you have here."

This is an excellent U. S. export, should have been included in the Marshall Plan, and ought to be part of the Peace Corps kit.

Also at the meeting was Seattle's Councilman David Levine whose father brought him to America as a small boy, fleeing from Russia. Here he has prospered and had the privilege of contributing to the progress of his adopted city and its government. Someone congratulated him for being able to make this notable and constructive rise.

"This is not to my credit," he said. "It is to the credit of a country and its government where such things are possible."

While these incidents do not have the evangelical zeal back of them that the old Fourth-of-July orators could deliver, nevertheless they make one grateful for the democracy that we now have, anxious to improve it, and fully aware that "democracy's kitchen" is doing its job creditably and striving to do better.

And we doubt that the perceptive but sharp-tongued Samuel Johnson would criticize.

---

* EDITOR'S NOTE: In only two cities, Baltimore, Md., and Kansas City, Mo., does the state governor appoint the police chief. These, we feel, are the exceptions that prove the rule.

Sewer Cleaning—

O'BRIEN
POWER RODDER
1000

Three Lakes, Wisc.—1050 feet in and back in 42 minutes.

...proven superior

by cities all over the country... **the world!**

100 feet or 75 miles!
... distance or obstructions are all met with the same successful O'Brien stride! Actual sewer cleaning experience is reflected in the design and careful engineering of each and every piece of O'Brien equipment. There is no guesswork ... no drawing board strategy ... only facts! That's why—**it's wise to pay a little more and get the best!**

O'Brien has a complete line of equipment designed to surpass the requirements of any sewer cleaning job. Electric hand model—yes! Sectional rod cable machines—of course! Bucket machines—you bet! Continuous rod Power Rodder—the finest! Cutters and accessories—custom designed for each job!

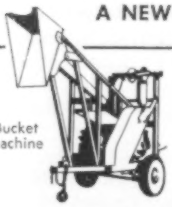
Buy others—IF
you CAN be satisfied with less than the best. BUT, if you want better operation, less maintenance and longer lasting equipment—buy O'Brien.

A NEW brochure now available. Write for yours.

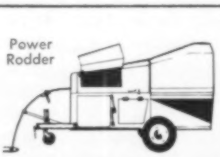
CITY OF
MADISON HEIGHTS
D.P.W.

Madison Heights, Mich.—
Pays for itself in maintenance cost savings.

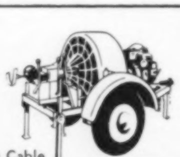
Skokie, Ill.—
"One demonstration convinced me," said city official.



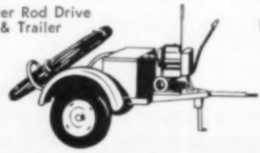
Bucket Machine



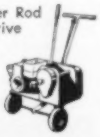
Power Rodder



#700 Cable Machine



Power Rod Drive & Trailer



Power Rod Drive

O'Brien MANUFACTURING CORP.

5632 NORTHWEST HIGHWAY • CHICAGO 46, ILL.
ROdney 3-7433

OUR MUNICIPAL NOTEBOOK

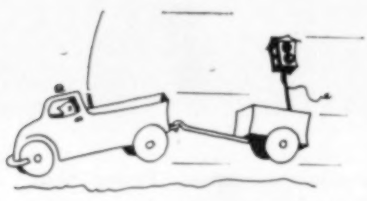
HOT-MIX STREET REPAIR

. . . is the best way to invest your street-maintenance dollar, according to William L. Bryant, city engineer of Jacksonville, Fla. To get this superior mix, Jacksonville has a ten-ton White asphalt plant that can produce any type of asphalt that he feels is needed for any special requirement. Most of the material is sheet asphalt with 9% bitumen.

* * *

PORTABLE TRAFFIC SIGNALS

. . . are the reserve traffic controllers used in Los Angeles when the standard traffic signal malfunctions. The city's Department of Traffic has these assigned to its four outlying district yards, with trailers, so that when a signal goes out of operation, a radio call will bring a portable replacement immediately. Each traffic-signal repair truck carries a small portable controller which may be used to operate the intersection traffic signals from the truck on a temporary emergency basis whenever it is practicable to do so. The portable traffic signal is used when it is not possible to operate the regular signals and also for special events at unsignalized locations.



* * *

TO TRAP BLOWING PAPER

. . . at sanitary fills, Cheyenne, Wyo., uses three fences spaced several hundred yards apart. Any paper that escapes the first will be trapped by the second or third. A man with a Propane-fueled Blue Flame weed burner periodically burns away the trapped newsprint.

* * *

BUY A GRINDER

. . . to make sewage sludge popular with the public. In Bowling Green, Ohio, Superintendent L. B. Barnes found that the public would willingly haul his sludge away for him and thanked him for the privilege if he shredded it fine enough so that it was easy to apply as a soil conditioner. A Royer grinder, Model NBS-4 has done the trick and has made Mr. Barnes one of the most popular men in town.

* * *

FROZEN STORM SEWER INLETS?

Bozeman, Mont., had plenty of trouble with them until the city put into use a Malsbary 250 steam cleaner to thaw them out. Since the generator requires a continuous supply of water, City Manager Oscar E. Cutting teams it with a tank truck that pulls the trailer-mounted unit from job to job. In warm weather he uses the same unit to clean municipal equipment.

* * *

CURBSTONE COURT

. . . for parking meter violations appears to be a growing, convenient way to assess fines for overparking. The parking violator merely places his traffic ticket in the mechanized "traffic court" and pays without the inconvenience and expense of a formal court appearance. One such unit is made by the American Bank Equipment Co., Philadelphia, Pa.

* * *

ASPHALT CURBS

. . machine laid to a precision that skilled manual curb builders will rarely duplicate, have some two decades of rugged service to back up their reputation. For the past 20 years they have been subjected to heavy service on U. S. Highway #1 between Washington and Baltimore and more recently on various heavy-traffic streets in New York City. The curb generally is machine-laid directly on the finished pavement; however, it can be laid on the binder course, followed by the top wearing course.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, N. Y.

WATER TOWER CHRISTMAS TREE

Such is the eye-catching Yuletide decoration that helps draw people to New Symrna Beach, Fla. The city has a 100,000-gallon Chicago Bridge & Iron Co., Watersphere located in its historic Old Fort Park where Spanish conquistadors once roamed. On its 154 feet of height, the city places some 700 to 800 colored lights as part of a general transformation of the area to typify the spirit of the season.

* * *

COMMERCIAL FORECASTING

. . . helps Park Ridge, Ill., take some of the guesswork out of its snow program. The city has retained Murray and Trettel, consulting meterologists, Skokie, Ill., for a specialized service, beyond that provided by the weather bureau. When a storm approaches within 100 miles, the meteorologists issue a "general alert" so that the foremen can prepare equipment for action. If the storm continues to approach, the forecasters issue a "storm warning" and estimate how the storm will act so that proper snow removal work can proceed immediately.

* * *

FIRE TRUCK STOPS TRAFFIC

. . . by a radio traffic-light-control system in many cities today. The emergency vehicle provides this control as it approaches a signalized intersection through a transmitter on the vehicle itself. A preemptor unit at the traffic-control box receives this signal and stops traffic promptly. An interrogation light facing the oncoming vehicle turns on, assuring the driver that he has control of the intersection. If two emergency vehicles approach the same intersection, the light gives the right-of-way to the one approaching first. One such controlling device is El-Tec, made by El-Tec, Inc., West Orange, N. J. ◄◄

TRACK-TYPE TRACTOR

DES MOINES, IOWA

The Des Moines Division of Public Works' new D6B works on gravel pit excavation, street construction and maintenance, and sanitary landfill—jobs that call for power and speed from a medium-sized crawler tractor. Heavy Equipment Supervisor John Porter, a 20-year veteran of Des Moines Public Works, says, "We recommended the Division buy a D6 because of two main reasons: we needed that size machine for its mobility, and we needed the dependability we always get from Caterpillar."

HOW TWO COMMUNITIES CUT COSTS WITH NEW CAT-BUILT MACHINES

GLENVILLE, N. Y.

The town of Glenville, New York, solved its nagging garbage and trash disposal problem with efficient, economical sanitary landfill. The town's 944 Traxcavator spreads, compacts and covers the refuse. Mr. L. O. Dunn, Town Councilman, states, "Economy and long life of our other Cat equipment were big factors in the selection of this machine. It has proved to be good for this job—and a versatile all-around loader in a one-man operation."

WHEEL-TYPE LOADER
CATERPILLAR

Your community or county, too, can save time and money with modern earthmoving or material handling equipment—and savings are even greater if it is Caterpillar-built. Tracks *or* wheels, important advances in power and operating ease team with traditional Caterpillar reliability and minimum maintenance requirements to squeeze extra work from your tax dollars. Consider, for example, advantages offered by the two machines shown here:

93 HP D6B Track-type Tractor 25% more lugging ability than former model. Adjustment-free fuel system permits use of economy-type, high-energy fuels. Dry-type air cleaner takes only five minutes to service. Forward-reverse lever saves time and effort in dozing and landfill work. Lifetime lubricated track rollers *never* need attention until rebuilding. Exclusive oil clutch delivers up to 2000 hours adjustment-free service. New hydraulic system (optional) with under-the-hood mounting of pump and tank frees front and rear of tractor for attachments, provides up to three hydraulic circuits. Matched tools for many jobs.

105 HP 944 Wheel-type Traxcavator More than seven years of testing have gone into this new excavator-loader. Choice of diesel or gasoline engine. Clean design for safe, convenient operation. Power Shift Transmission for fast response to load change. 41° bucket break out for heaped loads, stable design for smooth, safe operation, extra bucket reach to place loads fast, easily. Unit construction for easy servicing. Special attachments, buckets, including side dump, tailor machine to job. Roomy cab (optional) with large windows helps keep operator efficiency high. Two other sizes are available: 922—80 HP and 966—140 HP (only flywheel horsepowers listed).

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

Does your community have a refuse disposal problem? One answer is found in the new sanitary landfill movie, "A Decent Burial." It's informative, entertaining . . . ready to be presented by your Caterpillar Dealer. Call him today.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**DEPENDABLE MACHINES
GET THE JOBS DONE FIRST**

Field tests showed that polymer-blended asphalt outperformed the standard-mix material.

Polymer Blend Improves Asphalt Qualities

Massachusetts highway engineers, working with a research group from the Naugatuck Chemical Division, United States Rubber Co., have developed a polymer-blended asphalt for road-rehabilitation work. Better than 30 miles of roads were resurfaced with the new material during the latter part of 1960 and more projects have been scheduled for this year.

The rubber-like material, called Naugapol 3112, is made in dry-crumb form. The addition of as little as 3%, by weight, of the dry crumbs to hot asphalt produces a marked increase in viscosity and elasticity. Road and laboratory tests of paving mixes made with the polymer-blended asphalt indicate it has greater resistance to stripping, bleeding, low-temperature impact and rutting when compared with standard asphalt. Accelerated tests show it does not oxidize, or dry out, as quickly.

The state's 1960 program included the use of the mix in place of liquid-asphalt and stone-chip retopping and as a replacement for standard repaving techniques. In the case of resurfacing installations the material was placed over a ⅜-inch thickness of paving hot-mix made from a densely graded aggregate mix. New surfaces, as opposed to resurfacing, consisted of a preliminary leveling course of aggregate-asphalt surfaced with ½ to ¾-inches of the new material. Paving mixes previously used as a surface course averaged 1¼ inches in thickness.

The engineers found that the new mix permitted placing the road back in service more quickly than when repaved with standard mixes. ◄◄

Subdivision Street Requirements

Streets and right-of-way widths in new subdivisions in Sacramento, Calif., must conform to regulations listed in a new ordinance. Nine categories, from expressways to alleys, require varying degrees of right-of-way dedication.

In addition to easements for street trees and utilities, the ordinance establishes widths of 12 feet for moving lanes, 8.5 feet for parking lanes which include curb and gutter and 4.5 feet for sidewalks. Some heavy-traffic types substitute a ditch and shoulder section for the curb and gutter; most include a few feet of "unused" right of way.

The nine categories with their attendant right of way widths in feet are as follows:

• **Expressway**	100
• **Arterial street with parking**	84
• **Arterial street**	80
• **Major industrial street**	60
• **Major residential street**	54
• **Minor residential street**	42
• **Two-way access road**	39
• **One-way access road**	27
• **Alleys**	20

Additional information indicates that street plans must take into consideration both present and proposed facilities which may modify the right-of-way dedications to some degree for individual circumstances.

The city will tolerate the inclusion of half-streets only if it receives the deed for the remaining half prior to final approval of the subdivision.

An alignment requirement provides for connections to other areas, intersections at or near right angles, and a minimum spacing of 1,000 feet where minor streets intersect arterials. It also specifies that streets which enter opposite each other have intersecting or tangential center lines. In no case shall they be offset less than 125 feet.

The ordinance promotes the use of loop or circular streets but discourages the platting of cul-de-sacs except where necessary. Construction standards include the following:

- **Street and alley paving, including curb and gutter.**
- **Sidewalks on all streets.**
- **Storm sewers for adequate drainage.**
- **Water lines, sanitary sewers or septic tanks and other utilities.**
- **An electrolier street-lighting system.**
- **Street-name signs.** ◄◄

BROADER WARRANTY

• • • • • • • • • • • •

GREATER ECONOMY AND DURABILITY

'61 FORD TRUCKS

The new extended warranty for all 1961 Ford Trucks is just one example of the many ways Ford gives you maximum protection for your truck investment. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. Warranty does not apply, of course, to normal maintenance service or to the replacement as normal maintenance of such items as filters, spark plugs and ignition points.

The excellent fuel economy of Ford's modern 223-cu. in. Six has been proved in certified tests by independent experts over a 3-year span. Front tires on Ford conventional ½-tonners also lasted up to twice as long as those on other makes with independent suspension.

In addition to price, fuel and tire savings, 1961 Ford Trucks provide greater freedom from nuisance problems that crop up with other trucks. Ford's rigid quality controls give you the strongest safeguard of truck reliability ever. Fords stay on the job . . . out of the shop!

F-100 Chassis-Cab models have new stronger frame for greater durability and longer wheelbase for smoother ride. 28% more glass area in cab gives you new wide-angle view to front, sides and rear.

New Econoline Van . . . modern cab-forward design gives as much as 80 more cubic feet of cargo space in nearly three feet less length than leading conventional half-ton panels. It's America's lowest-priced* van and can cut yearly operating costs by $100 or more.

New 4-wheel drive pickups . . . priced to save you plenty, Ford's 4 x 4's come in ½- and ¾-ton capacities. They're tougher than ever with stronger frame, improved suspension and new optional heavy-duty front axle on ¾-tonners.

*Based on a comparison of latest available manufacturers' suggested retail prices

ALL-NEW
FORD "BIG SIX"
262-cu. in. engine

Now, the economy of a Six is combined with the dependability of heavy-duty, exclusive-truck engine design. In independent tests, Ford's new Big Six was pitted against the major competitive Six. Certified† result: Ford Trucks gave 13.5% better gas economy! And Ford recommends 34% fewer service operations in 25,000 miles of customer service. This means less time in the shop . . . more time on the job.

The new Big Six is one of four engine choices in Ford F-600 trucks for '61—including America's most popular truck V-8's.

†Tests simulated typical city delivery and shuttle service

FORD TRUCKS COST LESS

SEE YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" FOR PROOF!

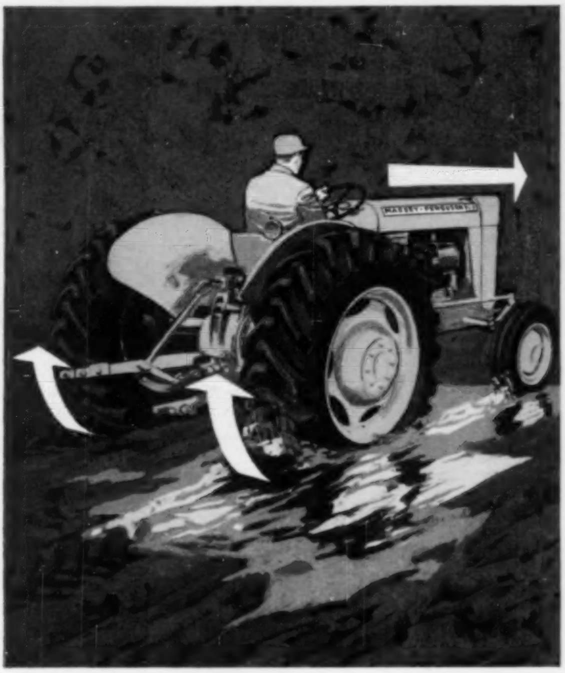
FORD DIVISION, Ford Motor Company

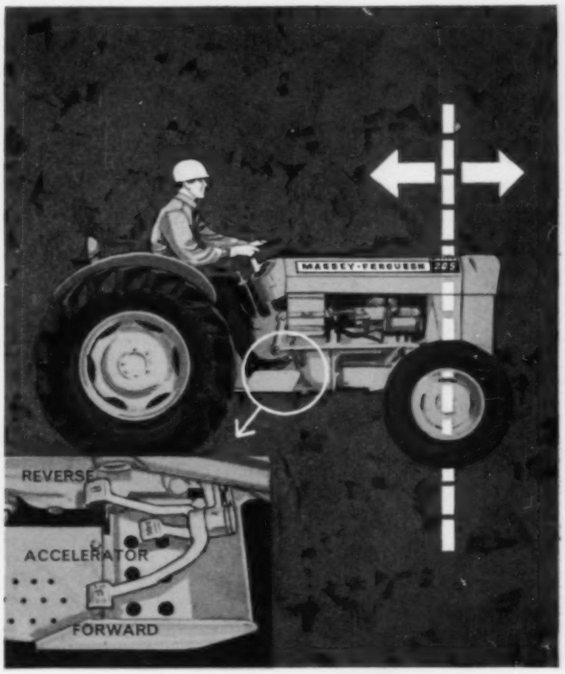
MASSEY-FERGUSON
DIESEL
205

Here are four big profit-making reasons why you should see the new diesel-powered Massey-Ferguson 203 and 205 Industrial Tractors. The first is power. Diesel power that's smooth—even at peak loads. Second is economy. These tractors with their matched equipment do more work per gallon of fuel than any other gas or diesel in their class. Third: They're more versatile . . . taking a multiple of power-matched attachments. Fourth: maneuverability is unequalled. Instant Reverse and Differential Lock (see opposite page) make the difference. So for power, economy, versatility, maneuverability—make the money-saving choice . . . buy a new M-F diesel-powered 203 or 205 rig!

**MASSEY
FERGUSON
INDUSTRIAL
EQUIPMENT**

NEW! Two Diesels Engineered To Speed All Jobs!

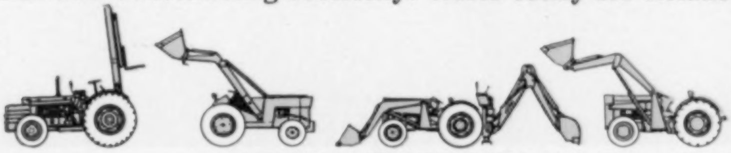




Differential Lock Exclusive on the MF 203. Can you stop wheel spin on ice, snow, mud and wet grass? You bet you can! With Massey-Ferguson's new spin-stopping Differential Lock. Here's how: By eliminating the action of the differential, and causing both wheels to turn as if they were fastened to a single axle, you get off slick spots quickly—without costly time delays. You're always working—no matter what the conditions—thanks to M-F's new Differential Lock!

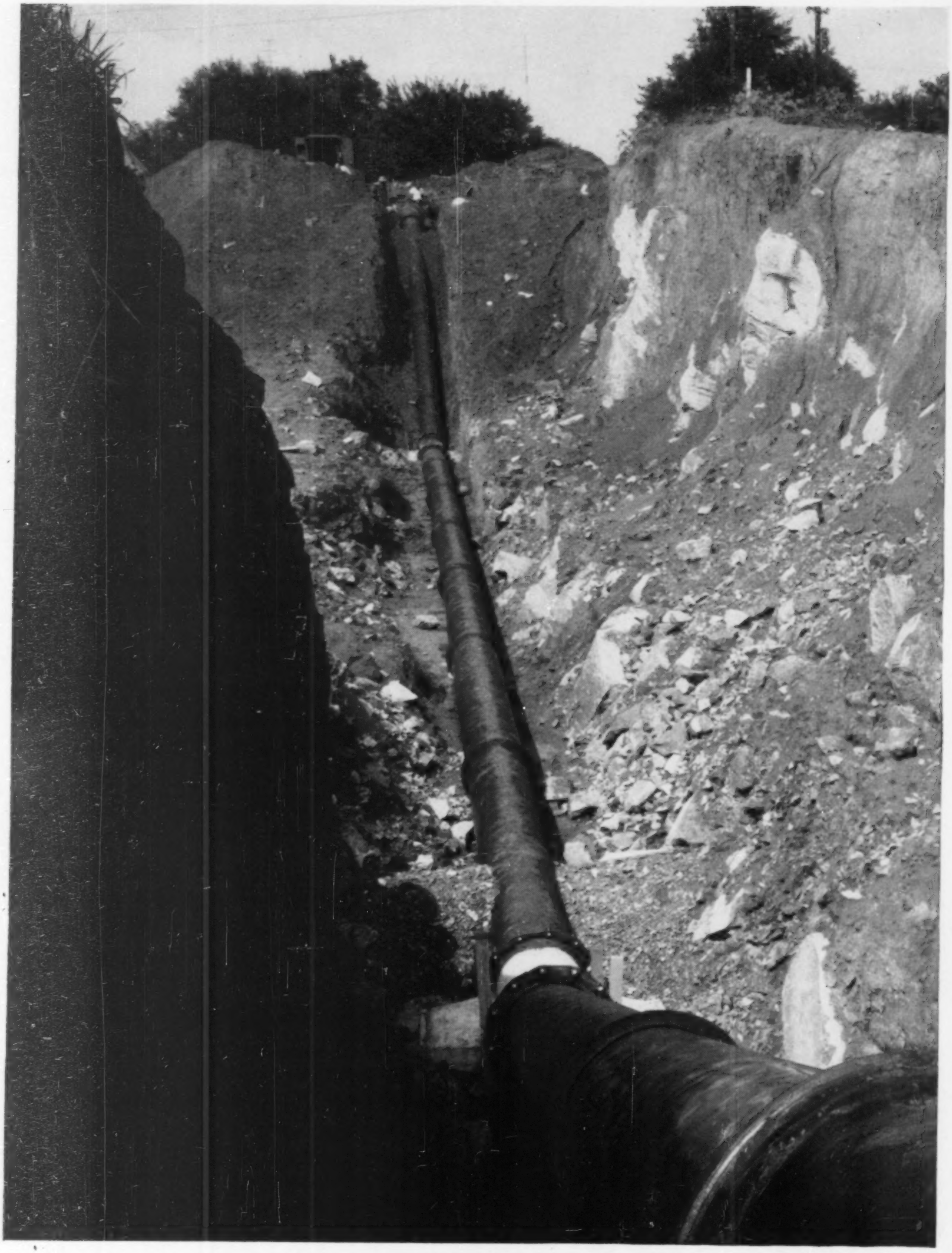
Instant Reverse Exclusive on the MF 205. Instant Reverse on the diesel-powered MF 205 Tractor eliminates all on-the-go shifting, clutching and pulling of levers. You go forward . . . reverse . . . smoothly, instantly, at the touch of a pedal. You maneuver in crowded work sites quickly. Cycle time between dump and load is fast. The operator stays fresh. You get more done. Make more profit. See more progress all day . . . every day. It's exclusive . . . it's Instant Reverse on the MF 205.

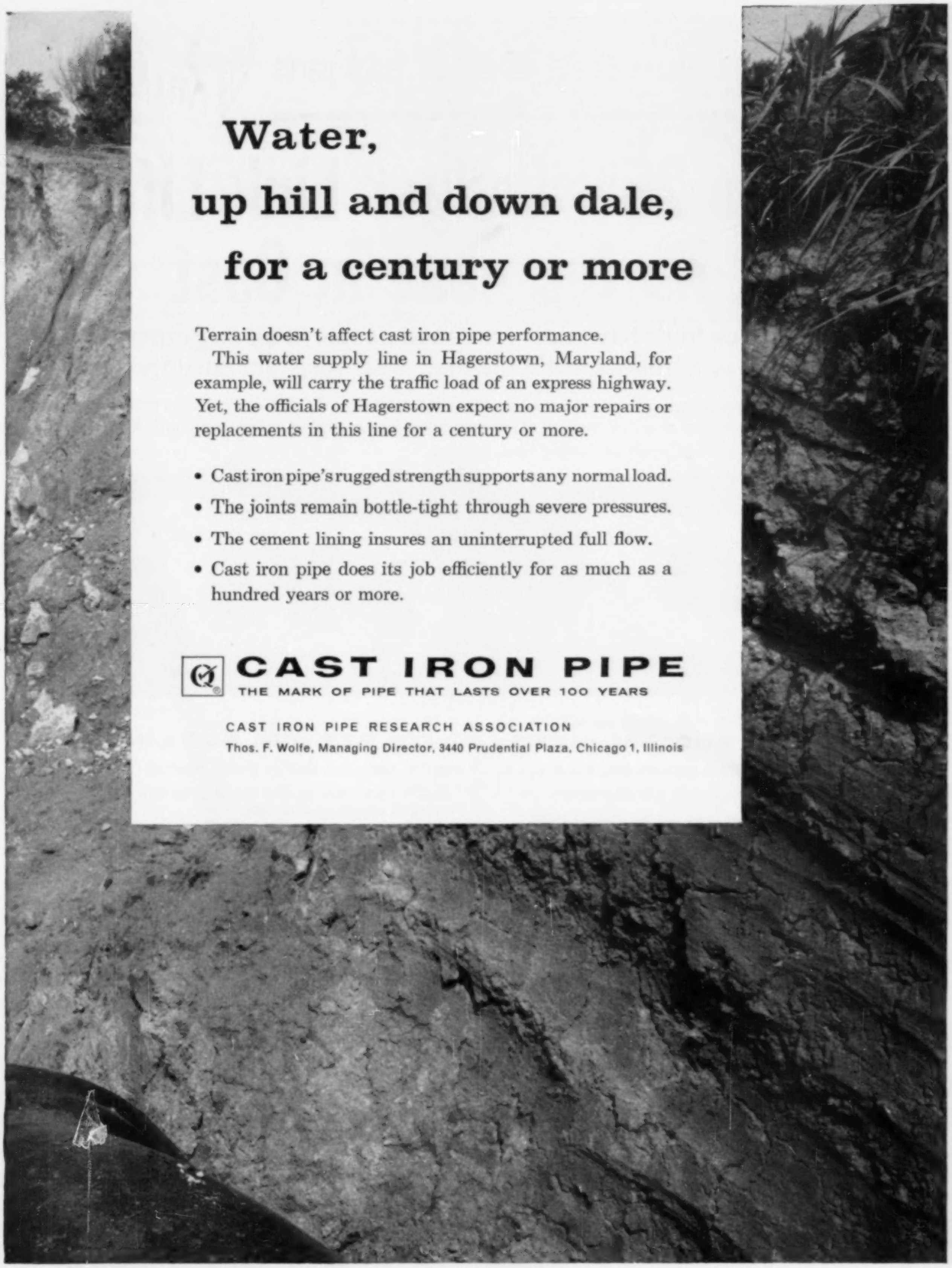
Some other things you'll want to know: Massey-Ferguson's diesel-powered MF 203 and MF 205 tractors are unmatched for rugged design and construction. For instance: Extra heavy-duty cast-steel front axles plus bumper grills are engineered to withstand all the heavy stresses of industrial work. M-F's own diesel engine has high-compression ratio of 17.4 to 1; 152-cu.-in. displacement. Starts easily, even in below-zero weather. Triple filtration plus distributor-type fuel injection insures long life and outstanding economy. Write today for literature.



NEW KIND OF ENGINEERED
DEPENDABILITY PAYS OFF IN PROFITS
Massey-Ferguson Industrial Division
12601 Southfield Road, Detroit 32, Michigan

SEE YOUR NEARBY MASSEY-FERGUSON DEALER TODAY





Water,
up hill and down dale,
for a century or more

Terrain doesn't affect cast iron pipe performance.

This water supply line in Hagerstown, Maryland, for example, will carry the traffic load of an express highway. Yet, the officials of Hagerstown expect no major repairs or replacements in this line for a century or more.

- Cast iron pipe's rugged strength supports any normal load.
- The joints remain bottle-tight through severe pressures.
- The cement lining insures an uninterrupted full flow.
- Cast iron pipe does its job efficiently for as much as a hundred years or more.

CAST IRON PIPE
THE MARK OF PIPE THAT LASTS OVER 100 YEARS

CAST IRON PIPE RESEARCH ASSOCIATION
Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

Special report to users of Cat D6 and D7 track parts

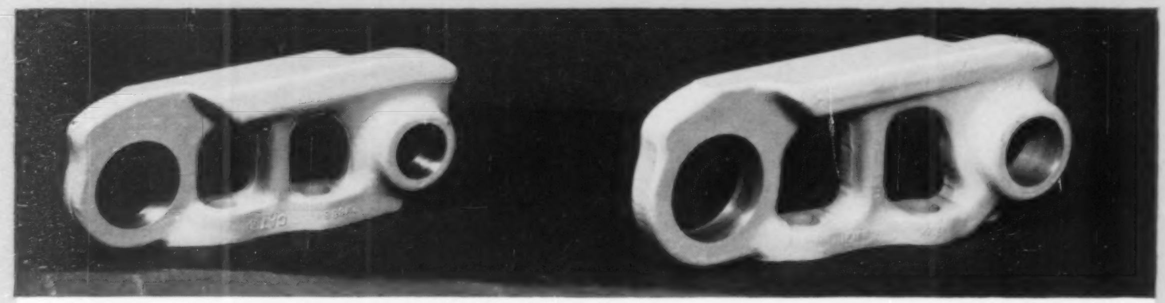
CAT CATERPILLAR

Parts you can trust
. . . cost less per hour

Up to 25% Longer Link Life at No Increase in Cost

New track links have rails hardened deeper than any other brand . . . hardness with file-like, wear-resistant qualities

You can't "see" metallurgy and heat treatment in track links. But you'll definitely see the *results* in the extra life you get from the *new* Cat D6 and D7 track links. These superior links will outlast all other brands yet the suggested price is no higher than before.



D6, 955 AND 561 LINKS

- "Hi-Electro" hardened rails give outstanding wear life.
- Rail wear cases are twice as deep as other brands.
- Closer bore tolerances retain pins and bushings better.
- Full 1¼" top rail surface to pin boss clearance allows more wear before roller flange contact.

D7, 977 AND 572 LINKS

- 12% thicker rails eliminate peening, rebuilding distortion.
- 32% thicker struts and more steel in critical areas increase over-all strength, resist cracking.
- File-hard "Hi-Electro" hardened rails withstand abrasive wear.
- Uniform, wear-resistant rail cases deeper than other makes.

These new track links are made from special steel, carefully pretested *before* manufacture. They're forged, machined and heat treated to develop maximum strength and toughness. A non-peenable wear barrier is induced *deeply* into rail top and sides by exclusive "Hi-Electro" hardening. This exacting heat treatment permits maximum, file-like wear resistance without brittleness.

Try the new links . . . and the many other *special-purpose* tractor undercarriage parts, all designed and built to keep your cost-per-hour to a minimum. Cat undercarriage specialists can help you select right combinations and give you money-saving recommendations tailored to your particular needs. It's all a part of your Dealer's Custom Track Service . . . the practical approach to lowering undercarriage costs by extending part life and machine availability through proper parts selection and parts care.

Etched rail cross-section shows deep, uniform wear case found on top and sides of new links.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Caterpillar Tractor Co., General Offices,
Peoria, Illinois, U. S. A.

Letters To the Editor

Snow Planning

Your editorial, "Next Year's Snow Removal Program" (March 1961), hits the spot. I am now drawing up next winter's program for snow and ice control, the first official plan of this sort ever drawn here. Your editorial helps drive home the necessity of proper timing.

We are providing a copy of the editorial to each member of the Borough Council, as part of our snow and ice report. The editorial also will become part of the official borough folio to be handed down from chairman to chairman.

CHRISTOPHER J. CONBOY
Councilman, Highway Chairman
Borough of Clifton Heights, Pa.

Sanitary Landfill

Permit me to compliment you on the article "Sanitary Landfill Proven Under Fire" by Neal McRae, Superintendent of Streets and Sanitation, Birmingham, Ala. (May 1961 p. 94). The "fire" was real in its figurative sense. It took a lot of courage and knowledge to fight it. It is not only a good story but its presentation is excellent. It is good to know that he had the backing of his superiors and their support in getting the necessary equipment.

CARL SCHNEIDER
Consulting Engineer
New Orleans, La.

Pontiac Film Sells Democracy Abroad

A 26-minute color-sound film produced by the Pontiac, Mich., Area Chamber of Commerce, "Pontiac Story of Progress and Promise" has been chosen by the United States Information Agency for distribution to U. S. embassies abroad. The USIA will show the film in the Far East to give other peoples a glimpse of a typical American industrial community.

The $12,000 film was produced in February by the Chamber of Commerce's Industrial Affairs Committee as part of the city's centennial celebration, designed to boost civic pride and call attention to Pontiac's accomplishments during its 100 years as an incorporated city.

The film has received an enthusiastic reception from the 22,000 people who have seen it during its first three months of distribution. ◄◄

RESEARCH
CUTS SEWER LINE COSTS!

The Clay Pipe Industry's research has pioneered dramatic new developments, making production and installation of lifetime Vitrified Clay Pipe more efficient and effective.

For example, Clay Pipe Industry research discovered the revolutionary resilient compression joints which are now offering important savings in installation time and cost to users of lifetime Vitrified Clay Pipe sanitary sewers.

Other important tests are now going on at the Crystal Lake facility, by contract at colleges and universities all over the country, and at the modern laboratories maintained by individual Clay Pipe manufacturers.

One experiment that promises to have far-reaching effects: detailed, year-long observations of root penetration of 16 separate sewer pipe joints. Others include shear load studies of both pipe material and joints, development of new, less expensive jointing materials and techniques, exhaustive analyses of competitive products, flow-coefficient studies, and various tests aimed at improving the clay pipe itself.

Results of the most significant of these tests will be announced as they become available.

Under the direction of A. J. Reed, NCPMI Vice President and Director of Research, new breakthroughs in manufacturing and uses of Clay Pipe are being made, offering greater, more confident service to those who specify and use lifetime Vitrified Clay Pipe.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
914 20th Street, N. W.
Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

(name)

(company)

(street address)

(city and state)

8-1C23 AC

COMPRESSION SEALED, VITRIFIED
CLAY IMPERVIOUS PIPE
THE STANDARD in SANITARY SEWERS

NATIONAL CLAY PIPE MANUFACTURERS, INC.
Washington, D. C.

On narrow streets the operator flushes both sides in one pass.

Daily Flushing Cleans Streets

A full-time street-flushing program in Greenville, S. C., results in the daily cleansing of all hard-surfaced streets which have curb and gutter. A supplemental sweeping schedule furnishes additional dust removal to the same thoroughfares on a weekly basis.

Schedules

Two flushers, each mounting a 1,650-gallon Greenville Steel tank, start their routes at noon. One covers 45 miles of streets including the business section before it returns to the garage at midnight. The other washes about 30 miles of streets in outlying areas in addition to performing special tasks which include dust control on construction projects for the Street Department and sewer flushing for the Sewer Department.

The International and Mack truck flusher chassis have traveled a total of more than 300,000 miles in the performance of these duties. One operator estimates he has accumulated almost 400,000 miles while flushing streets.

The two Elgin sweepers clean all surfaced streets once a week. Because we have no parking prohibitions in the business section, both sweepers tackle this area at midnight every Saturday, working around the few cars that remain, until 7 a.m. Sunday morning.

Picking the leaves up used to be an almost insurmountable problem because our streets have an abundance of trees. The solution consisted of purchasing two Gledhill Vacuum Leaf-loaders. A flat-bed truck with built-up sides pulls each trailer-mounted loader and travels to the disposal area with its 20-yard loads 12 to 14 times per day. The loader requires as little as seven minutes to fill the truck box where leaves occur in convenient piles. Most loads take about twice this minimum loading time, however, because the loader must travel from place to place on the streets and boulevards to accumulate them.

We now spend about two months in the fall on leaf removal to obtain superior results. We formerly spent much more than this and were not proud of our efforts when winter forced cessation of this task. In addition, our flushing program is more effective at this time of year because of the improved leaf pick-up.

MARTIN FRICK, *Superintendent of Sanitation* and JOHN COX, *Assistant Superintendent* *Greenville, S. C.*

A Sweeping Start

Municipal support of the current cleanup campaign in the Chatsworth District of Los Angeles brought Mayor Poulson and Roy Rogers, honorary mayor of the district, to the kick-off ceremonies. The local Chamber of Commerce instigated the campaign to clean up both public and private property. Municipal officials are making a special effort to set a good example for local citizens to emulate. The picture shows Mayor Norris Poulson (seated in the Mobil-Sweeper cab) conferring with Roy Rogers and Chamber President Don McMahon. ◄◄

DEPARTMENT OF PUBLIC WORKS

TRAXCAVATORS . . . fast . . . safe . . . easy to operate ALWAYS READY TO GO WHEN YOU NEED 'EM

The unpleasant truth is . . . you can use up more of your budget maintaining an undependable machine than you spend on the loader that's always ready to do your jobs.

Your own records will show Traxcavators' unmatched dependability. Cities and counties, contractors and industrial companies have recorded operating costs and machine service hours that unquestionably prove that you get more work for your dollar out of Traxcavators than other loaders. Traxcavators are built better. And the Caterpillar Dealer keeps a full inventory of parts so that when your loader does need a quick repair you get just that . . . fast service—constant availability.

And you get more than availability . . . you get the easiest operating, *fastest* loaders on the market. With power shift transmissions, automatic controls, Traxcavators make good operators even better in a hurry.

All your work, the tough stuff, the easy jobs . . . they're all handled faster and easier with a Traxcavator. Call your Caterpillar Dealer . . . do business with the man whose business is built on dependability.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

TRAXCAVATORS ARE MAKING OTHER LOADERS OBSOLETE

READY TO PRODUCE WHEN YOU NEED IT

All Traxcavators have the *automatic bucket positioners* that speed every cycle, do half the operator's bucket controlling. All but the 933 have Cat *power shift transmissions* that change speed or direction with a finger touch, make operator's job easier, faster . . . all day long. Direct electric starting or gasoline starting engines that assure *all-weather starts* are available. All loaders have *dry-type air cleaners* that can be serviced in five minutes.

Track-type Traxcavators all have Cat exclusive *lifetime lubricated rollers* and idlers that never need servicing until rebuild time. *Side dump buckets*, special material buckets, back hoes and dozers are also available.

TRACK TYPE

933 1⅛ yd. std. bucket – 52 HP (flywheel) Cat Diesel Engine – direct drive transmission with Cat exclusive oil clutch that outlasts other flywheel clutches as much as 5 to 1.

Production capability: 1620 tons per day*

955 1¾ yd. std. bucket – 100 HP (flywheel) Cat Diesel Engine, turbocharged for efficiency and quick response. Cat power shift transmission.

Production capability: 3320 tons per day*

977 2½ yd. std. bucket – 150 HP (flywheel) turbocharged Cat Diesel Engine. Power shift transmission.

Production capability: 4550 tons per day*

*3000 lb./yd. bank run material excavated and loaded per 10-hour day.

WHEEL TYPE

922 1¼ yd. std. bucket – 80 HP (flywheel) turbocharged Cat Diesel Engine (optional gasoline engine), power shift transmission. Safe, open design.

Production capability: 2220 tons per day†

944 2 yd. std. bucket – 105 HP (flywheel) turbocharged Cat Diesel Engine (optional gasoline engine), power shift transmission. Safe, open design.

Production capability: 4240 tons per day†

966 2¾ yd. std. bucket – 140 HP (flywheel) turbocharged Cat Diesel Engine. Dual-ratio steering for work or travel. Power shift transmission.

Production capability: 5820 tons per day†

†2700 lb./yd. loose material moved from stockpile into truck or close bin per 10-hour day

Non-dusting ND-25 unclogs sewer lines fast! It generates heat and agitation immediately when poured into manholes . . . begins to remove and loosen debris on contact. Colored red, ND-25 enables you to test its effectiveness by observing traces of the color in other areas of the sewer system. ND-25 saponifies and emulsifies greases and oils — digests roots, paper and other materials containing a high percentage of cellulose. Packed in convenient 50 lb. metal containers.

See the man from National Chemsearch for the best in municipal chemicals. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for free brochure on ND-25.

ND-25 SEWER SOLVENT

NATIONAL® CHEMSEARCH CORP.

2417 Commerce Street, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

THE SEWER SOLVENT WITH RESULTS YOU CAN SEE!

Sewer Cleaning By Contract Pays Off

In one year's time, Maple Heights, Ohio (population 34,000), improved its sewer system without paying large capital outlays for equipment or creating special crews. Contract sewer cleaning by the city was the answer and we feel the $100,000 expenditure for this work was well justified. The project consisted of rodding more than 200,000 feet of sewer and cleaning by bucket about 40,000 feet. Sizes ranged from 6- to 30-inches, with the largest amount in the 8- to 15-inch category.

We feel that contract cleaning has many advantages in a large-scale operation such as this. First, getting the job done was important, and to do so in a reasonable period of time with city personnel would have required new equipment and the hiring of personnel that could not be used once the work was completed. Also, by using the contract method our own crews could continue with emergency and routine work; it was not necessary to divert personnel from other jobs. Finally, the knowledge of experienced crews meant a good job at the lowest possible price.

Norman Haslop & Associates of Elyria, Ohio, was the low bidder on the job. With up-to-date equipment and well trained crews, they proceeded to remove such material as bricks, sand, rock, tree roots, tree branches and grease, as well as considerable amounts of sticky clay. Some sections of 4,000-feet contained up to two cubic yards of debris.

Two-man teams operated the Roto-Rooter power rodders and Champion bucket machines, with one supervisor over the two units. The several crews averaged about 1,000 feet per day but on some days the crews cleaned as much as 3,000 feet.

Max Fields, inspector for the city, approved all rodded, bucketed and flushed pipe, and submitted reports to our engineering consultant, H. P. Peterson of Maple Heights. The contractor also provided daily written reports of all work performed; showing lines cleaned, deposits removed, future maintenance needs of the line, and manhole and invert conditions. At the end of each month he submitted a map, showing by color code what lines were cleaned and the operations performed.

The bucket machine removed sand, clay, rocks, tree roots and similar materials from the sewers.

Results noted prior to completion of the work included:

- **Fewer complaints because of stopped-up sanitary sewers.**
- **Fewer blocked storm drains, especially after heavy rains.**
- **Almost complete elimination of emergency night work by our crews.**
- **Increased capacity of the sewer system. In some places we thought the sewers were inadequate and in need of replacement with larger diameter pipe. After cleaning, some of these lines were found to be adequate.**

Our experience with contract cleaning was satisfactory and we feel other cities might well investigate the desirability of contracting their sewer cleaning work.

H. LaMar Trefsger
Director of Service
Maple Heights, Ohio

It Smells or Does It?

Melbourne, Fla., recently faced a public-relations problem which, although more imagined than real, became most vexing. Its solution, however, proved both ingenious and highly satisfactory.

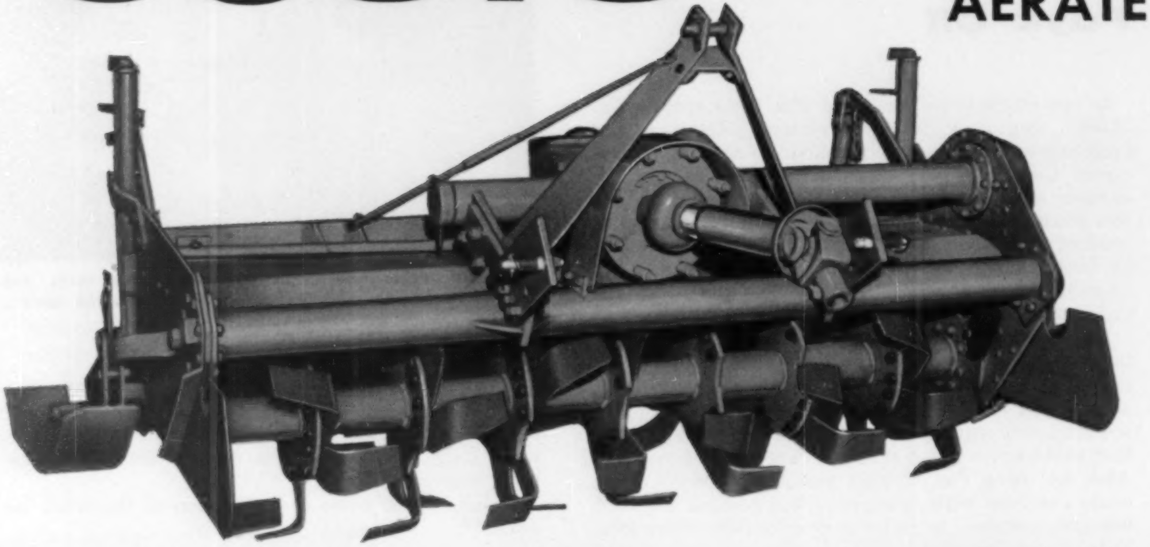
One of our air-lift sewage ejector stations is located within a closely built-up residential area. According to the residents of the surrounding homes this station made considerable noise and ejected sewage odors throughout the neighborhood. Odor and noise complaints averaged two a week for many months.

Public Works Director Norman Lefebvre and Sewage Treatment Supervisor Gilbert Dalton solved the noise problem by constructing a baffled muffler from a 55-gallon oil drum. Continued visits to the area showed the scent problem to be more imagined than real but to the surrounding residents the very presence of a sewage lift-station served as prima facie evidence that it should smell.

Ever conscious of good relations with the public the Public Works Department purchased a pint bottle of "New Mown Hay" perfume and emptied its contents in the fiberglass-filled baffles of the muffler. They then invited the housewives of the neighborhood to the christening of the muffler to listen to its sonorous purr. They also smelled the purity of the exhaust. Comments ranged from "Doesn't that smell nice" to "Well, I guess that takes care of our complaint." The applied psychology of the perfumed muffler has eliminated all complaints regarding the lift-station. ◄◄

CUT COSTS

MIX
PULVERIZE
RECLAIM
AERATE



NEW *Mix-in-Place* ECONOMY

The *all new* Howard UNIMIX is the low cost answer for mixing and pulverizing jobs of the contractor, developer or local government. UNIMIX is a power take-off blender-pulverizer designed to work off modern tractor power in the 55-80 h.p. class . . . the same power package now used for back-hoe and front end loader work.

Why pay *three, four* or *five* times more for self-propelled, single purpose blending equipment only to have it at expensive rest when the jobs are completed?

The UNIMIX is versatile . . . Mix and blend; pulverize and reclaim; add moisture for better compaction; aerate soil to speed production; strengthen bases and sub-bases with any additive and clear land.

Write today for literature and demonstration facts.

HOWARD
Unimix

UNIMIX 80 mounted on Massey-Ferguson 85 (butane) tractor. City street reclamation in Amarillo, Texas using dry lime.

HOWARD
unimix

Industrial Division • HOWARD ROTAVATOR CO., INC. • Harvard 2, Illinois

KEEP ATLANTIC CITY CLEAN
DEPARTMENT PUBLIC WORKS

Compactor trucks include a frame for a snowplow blade.

Landfill Provides Garage Site

A 200-acre sanitary landfill will soon provide the site for a $2,500,000 Public Works and Public Safety Department garage, and a boat yard. For 30 years, Atlantic City has been compacting and covering refuse to an average depth of six feet in this swampy lowland area in the northeast portion of the city.

The new combination building will replace an old Public Works garage which is inadequate in size and site requirements. At the present time there are no enclosed facilities for many vehicles. Because the site of the new building is a landfill, piles will support the walls and floors to prevent differential settlement.

Refuse from a permanent population of 60,000 persons, which soars to 120,000 residents for the six-month warm-weather season, will underlay the badly needed garage. Two feet of dirt will cover the refuse from this resort community.

An International TD-14A and a rubber-tired Hough Loader, Model H50, U264, currently work this landfill site. They will still be digging and covering on the vacant parts of the 200 acres while the building construction takes place on the previously-filled portion near the road.

Eight Leach Packmasters and four Gar Wood compaction units, mounted on International truck chassis, gather and haul the refuse from the city's residential and commercial areas semi-weekly. These same trucks mount a plow on the front end for winter snow removal.

PUSH
DEPARTMENT OF PUBLIC WORKS

The litter containers on the boardwalk fill slowly prior to the opening of the summer season.

Enclosed litter baskets, spaced at 400-foot intervals along the four-mile length of the boardwalk require attention once each week in the winter, but the collection crews find it necessary to empty them nightly during the bathing season.

WILLIAM F. CASEY
Commissioner of Public Works
Atlantic City, N. J.

48 Trucks Serve 56,800 Dwellings

During 1960 the Washington (D.C.) Suburban Sanitary Commission provided refuse-collection and disposal service for about 56,800 dwelling units in most of the Montgomery County suburban area. A fleet of 43 packer-type refuse trucks and five general-collection vehicles transported 72,819 tons of material to the Lyttonsville incinerator or the sanitary landfill located on the Anacostia flats. The commission also disposed of another 55,055 tons of refuse collected by private and municipal haulers operating in both Montgomery and Prince George's Counties.

The post-Christmas days give a good indication of the importance of refuse collection in heavily developed county areas. In the three days immediately following Christmas Day 1960, WSSC forces collected and disposed of 1,100 tons of material.

Mushrooming population in the suburban area has resulted in pushing disposal facilities to near capacity. The commission is now reviewing a report submitted by a private consultant recommending expansion of disposal facilities to provide greater efficiency and capacity as the refuse task grows. Some time this year WSSC will decide how to enlarge the disposal facilities as well as to enlarge collection service. ◄◄

The Dallas Fire Department At 75

This is the fastest method of rescue when there is no time for ladders.

The Dallas, Texas, Fire Department celebrated its 75th birthday last year. 1960 was the Diamond Jubilee Year also for the State Fair of Texas and the *Dallas Morning News* and we all celebrated together. The *Dallas Morning News* published an eight-page tabloid section featuring the Dallas Fire Department. At the State Fair of Texas we featured three separate events namely, a Thrill Show, a Fire Prevention Booth, and our Official Western Style String Band, the Fire House Rhythm Kings.

Let me tell you a little about our Thrill Show or Rescue Demonstration. A giant scaffold, 36 by 24 by 65 feet high, was furnished by a local company and erected on the fair grounds. We moved in one heavy-duty rescue unit and one 100-foot aerial-ladder truck.

The men who put on the Thrill Show were rookie firemen. None of them had ever worked a day in the Dallas Fire Department. The demonstration was part of our training exercises. We told our State Fair Texas visitors that we can get a life-saving resuscitator and the men to operate it to any location in the city within two minutes after we are phoned. All ten of our battalion chiefs' cars carry resuscitators and we have five in reserve in various locations in the city. Twelve are E & J and three are Stephenson.

The Dallas Fire Department has six rescue units, of which five are heavy-duty and are also located strategically throughout the city. All units carry jacks that can pull, push, or separate with 25 tons of pressure and are fine for getting people out of smashed cars. The five heavy-duty emergency trucks each carry generators with enough capacity to light a small town.

Besides these rescue units, every piece of apparatus carries some rescue equipment. We also have a mutual aid agreement with other fire departments in our county, which means that nine more rescue units are available for disaster work.

C. N. Penn
Fire Chief

Microwave Pole Tops City Hall

A 100-foot, 5,000-pound Union Metal Monotube antenna pole completes the Canton (Ohio) City Hall.

The pole tapers from 14 inches at the center to 9½ inches at the ends. It is made of two 50-foot sections; the 14-inch ends have flange plates to bolt the sections together.

At first the pole will be used for police two-way radio communications; soon it will support a 6-by-8-foot reflector for use in a statewide microwave police network.

The picture shows a steel rigger, 120 feet above the ground, bolting together the two sections of the microwave pole which a crane will raise to a vertical position on the framework of the City Hall. ◄◄

Why is one name on more fire radios than all others combined?

Experience has proved that Motorola builds a rugged radio for a rugged job.

What makes Motorola more rugged than others? Here are a few examples:

Precision tuning coils are made *right* to stay on frequency...no matter how bumpy the road. Critical selectivity circuits are sealed in plastic, guaranteed for life. Every major component is secured against breakaway and "whip."

The result of this built-in ruggedness is longer equipment life, fewer outages, less maintenance and *lowest communications cost.*

Can you afford to rely on anything less than Motorola?

For full details on Motorola radio—and how it can give your department the most *dependable* communications available today—write Dept. AAC127.

MOTOROLA 2-WAY RADIO
Motorola Communications & Electronics, Inc.
A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Illinois

Real Tigers for Toy Ones

The Milwaukee Zoo is the proud recipient of three Siberian tigers, contributed by the Badger Foundation. To commemorate this event, Superintendent George Speidel presented J. O. Wright, president of the Badger Meter Manufacturing Company, with three toy replicas. This Badger Foundation contributes funds and energies to worthy health, education, welfare, cultural and civic organizations on a local basis. ◂◂

Mr. Wright (r.) accepts the toy tigers from Superintendent Speidel.

Are Your Cemetery Rates Too Low?

In Kansas, the municipally owned cemetery is a financial liability. The inability of the municipal cemetery to support itself seems to be generally true over the nation. Municipal cemeteries can become nearly self sustaining just as municipal water and light plants are. In so doing, tax money now being used for cemetery maintenance could be used in other government budgets, such as park and play ground improvements. There are many privately-owned cemeteries in Kansas and they operate at a profit while usually doing a better job of maintaining their property.

Why is this possible? It is because private cemetery operators evaluate how much it costs to open and close a grave, to keep a complete set of records, to replace equipment and to hire men to operate this equipment. They set up their cost sheets and establish prices, adding to costs a fair investment profit and a fair salary to management.

Prices charged by private cemeteries are not exorbitant when one considers that a grave space is one of the most permanent investments a family will ever make. Generally, a family will not mind paying more for a burial place if it is in a scenic, well-kept cemetery that promises good perpetual care. This is why private cemeteries are operating successfully at higher rates than those of municipal cemeteries.

If something is not done toward bringing Kansas municipal-cemetery operation closer to a self-sustaining basis, municipally owned cemeteries are either going to become so run-down that they will be a disgrace to the community or else it is going to take more of the tax dollar to maintain them.

The most obvious step to deliver municipal cemeteries from this threatening crisis appears to be simply adjusting prices to decrease the annual operating deficit.

A national survey indicates that it costs between $50 and $60 to open and close a grave at current labor and equipment costs. By adding cemetery maintenance cost through the years, some idea can be obtained of the demand the municipal-cemetery budget is making on the tax-payer and will make in the future.

Millard Wells, superintendent at Pratt, Kan., population 7,000, said recently, "In 1942 our highest prices were $30 per space; now they are $125. The lowest were $2.50 each; they are now $15. In low places, opening and closing graves was $5 for a box and $7.50 for vaults; now it is $35 and $10 for setting the tent and this isn't enough.

"We started to raise our prices about 1946—the $30 spaces to $50 and others up about $5 each. We tried to raise them a little each year until we reached this present price. Our board says if the water and light department pays its own way, so should we."

Rama H. Youse, superintendent at Clay Center and secretary of the cemetery association, remarked, "A survey made by the cemetery association in 1957 showed that our cemetery was far below average in comparison to comparable cities at the state and national level. The best advice from my standpoint is for all cemeteries to strive to be as self-supporting as possible and to go mechanized as much as possible to beat the big labor cost."

E. M. Calder
President
Kansas Cemetery Association

Plans New Golf Course

Fort Walton Beach, Fla., has in the planning stage a 300-acre park which will include a championship-type 18-hole golf course, combination golf clubhouse and bathhouse, swimming pool, large athletic field with five baseball diamonds, an organized camp, fishing area, tennis courts, picnic areas and bridle trails.

The Charles M. Graves Organization, park and recreation specialists of Atlanta, Georgia, are preparing the overall master plan for the area. Carl F. Stokes, superintendent of parks and recreation, will be in charge of the new course. ◂◂

JOHN DEERE
720

Speed "high-pressure" through-street jobs with a 3010 Wheel Loader

With traffic pressure always high around street excavations, equipment like the new John Deere "3010"—efficient, clean-working—is a powerful asset. The unit is available with a choice of power—64 engine h.p. gasoline or 69 engine h.p. Diesel. Power steering and power brakes are standard. Constant-mesh transmission provides 8 speeds forward, 3 reverse for any power requirement.

Efficient controls boost productivity of the heavy-duty "3010" Wheel Loader and power-matched backhoes. Single-lever control operates loader lift arms and bucket for rapid handling. John Deere Backhoes operate with simple two-lever control. Flush-digging model 51 has rotary boom cylinder which centers or slides to any of four off-center positions, moved by the unit's own hydraulic power.

All-day operator comfort and efficiency are provided by the clean, functional "command post" design of the platform. Deluxe seat adjusts to operator's weight. Open design insures freedom in mounting, and getting down. Low profile improves machine stability and operator's view.

For a demonstration, contact your dealer through the yellow pages.

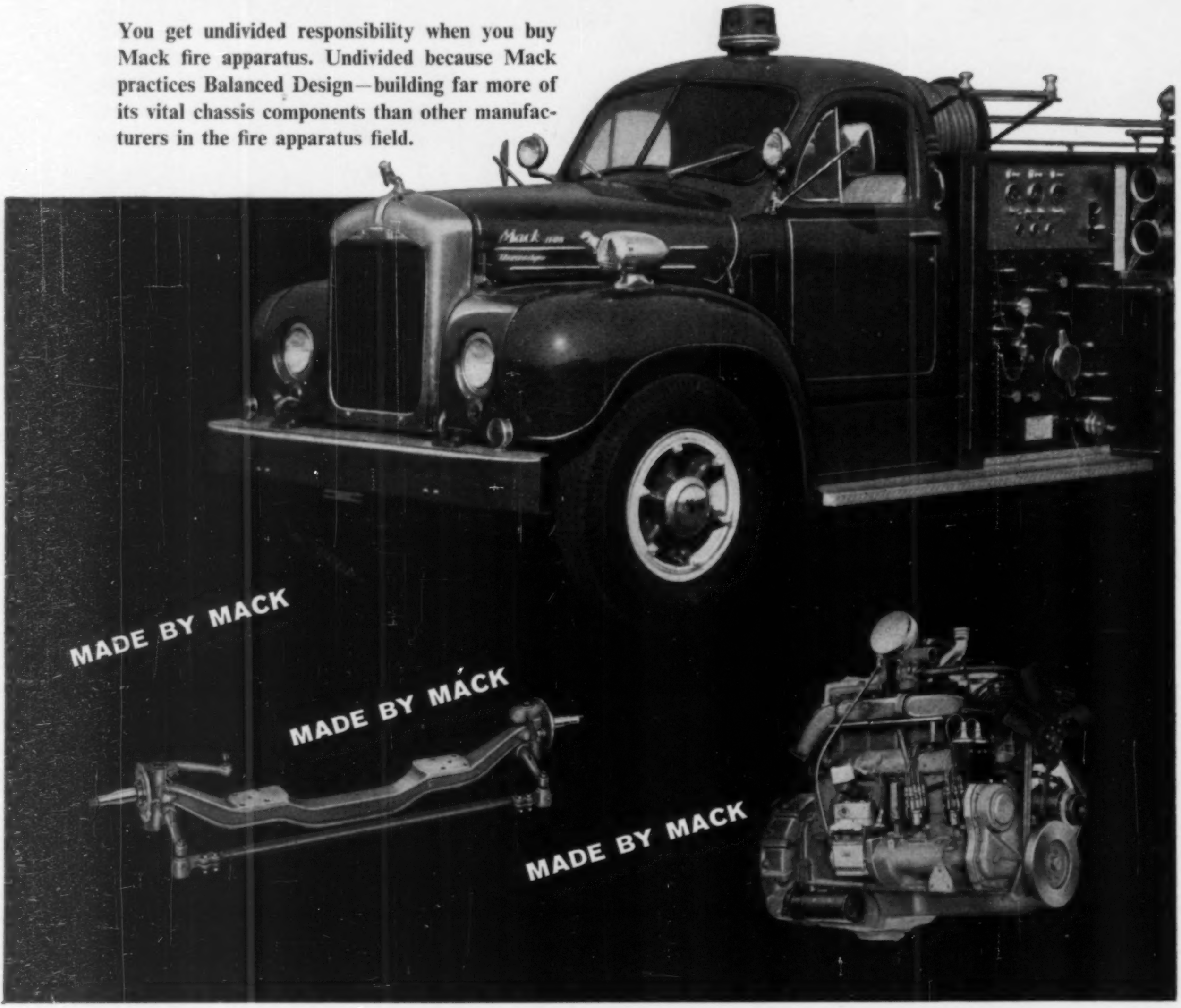
John Deere, 3300 River Drive, Moline, Illinois.

JOHN DEERE

LOADERS
BACKHOES
SIDEBOOMS
AND
CONSTRUCTION
EQUIPMENT

Mack STANDS FOR UNDIVIDED RESPONSIBILITY

You get undivided responsibility when you buy Mack fire apparatus. Undivided because Mack practices Balanced Design—building far more of its vital chassis components than other manufacturers in the fire apparatus field.


Mack
MADE BY MACK
MADE BY MACK
MADE BY MACK

But what of other manufacturers?

Without exception they buy many or all of their major chassis components from outside vendors . . . engines, clutches, transmissions, front and rear axles, and drives.

Too often this means split responsibility. Who guarantees the component? Who provides the service on it? Sometimes the apparatus manufacturer . . . sometimes the component manufacturer.

Is this good? Mack feels it is not. When you purchase Mack apparatus you must receive unqualified satisfaction. To insure this satisfaction, Mack insists on building far more of its vital components than other manufacturers. In this way Mack not only controls the quality of its components, but it can be sure its components will work in harmony . . . as an integrated unit.

You cannot have Balanced Design with mass produced parts—parts built to the lowest common denominator of a broad area of manufacturers.

Balanced Design is the exclusive Mack practice which assures you of the most efficient, trouble-free and best-performing apparatus. It is made possible only by manufacturing and matching our own components so exactly that they function as a completely integrated apparatus.

Thus Mack engines, headed by the famed Thermodyne® 707C, pump effortlessly hour after hour, day after day . . . transmissions match exactly the characteristics of Mack engines . . . Mack single or four-wheel-drive rear axles with PowerDivider give maximum traction under all road conditions . . . air or hydraulic brakes provide quick, dependable stopping ability.

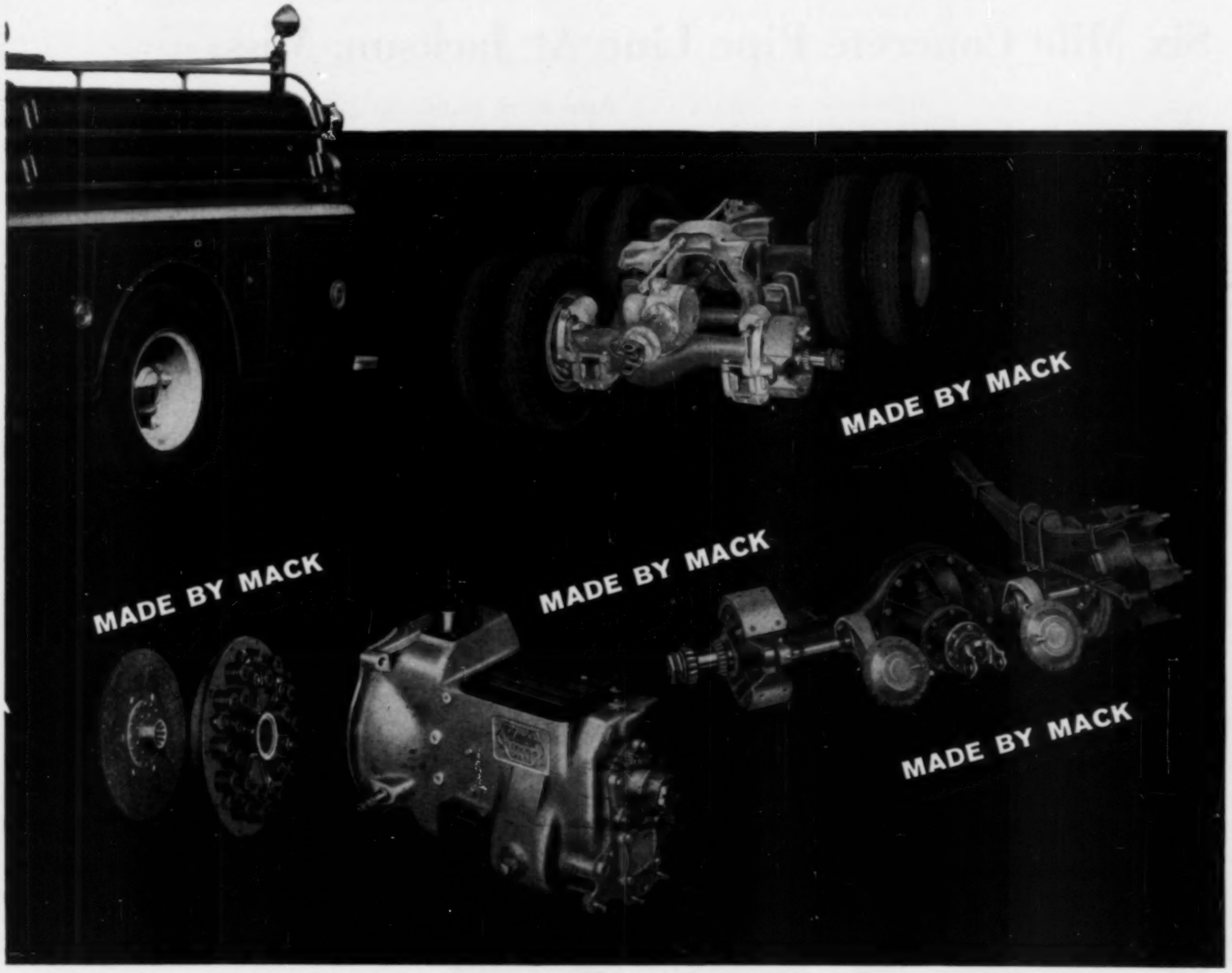
That's why Mack can assume undivided responsibility for the entire vehicle. We build it and we stand behind it 100%. Mack Fire Apparatus, Allentown, Pa. Mack Trucks of Canada, Ltd., Toronto, Ontario.

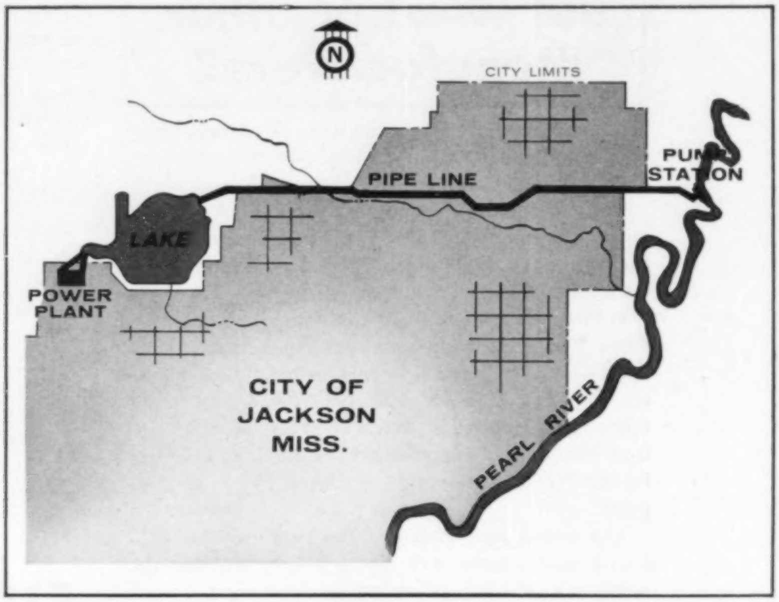
8212

MACK

FIRST NAME FOR

FIRE APPARATUS





385 Acre Lake Filled By Six Mile Concrete Pipe Line At Jackson, Miss.

Building a reservoir to provide cooling water for a power plant is not unusual. But to supply it with a 6-mile, 20-inch pipe line is.

The Mississippi Power and Light Company's Rex Brown Station at Jackson planned to triple its capacity, but was concerned that pulling more ground water from its wells might materially affect the ground water supply in the area.

They came up with the idea of a reservoir on a nearby unused piece of public land that would do the job. And although some surface water would find its way into the lake, the primary source of water would have to come from somewhere else.

Engineers picked the Pearl River, on the other side of Jackson, as that source. The pumping station was erected, the six-mile prestressed concrete steel cylinder pipe line was laid, and 8,000,000 gallons per day started to flow into the lake. In six months the lake was filled.

The pumps are turned on or off to maintain the water level and according to Consulting Engineers Michael Baker, Jr., Inc. of Jackson, Miss. and Rochester, Pa., the results have been extremely satisfactory.

Taylor-Wheless Company installed the pipeline. Price Brothers Company, with headquarters plants in Hattiesburg, Miss. and Dayton, Ohio, manufactured the pipe.

Far left: A trencher was used on the job. Note backhoe picking up pipe.

Near left: The backhoe was used to place the pipe and to pull home the joint.

Price Brothers
CONCRETE PRESSURE PIPE

The Answers to Water-Works Problems

. . . presented to the American Water Works Association at its Detroit meeting, June 4th to 9th

Planning for the nation's water needs

Senator Robert S. Kerr, Oklahoma, believes there is just one answer to the problem of water shortages: broad comprehensive planning for water-resources development. The Senate's Select Committee on National Water Resources found the margin between the nation's water supply and demand is shrinking rapidly.

Withdrawals of water now approach 300,000,000,000 gallons daily. This demand will double by 1980 and triple in 2000 if there is little or no change in the present methods of water use and waste. The Committee finds that five major areas need developing:

- *Regulation of stream flow through reservoir construction and management.*
- *Improvement of stream quality.*
- *Better use of potential underground storage.*
- *Increase water efficiency through elimination of wasteful practices.*
- *Supporting research programs to a greater extent.*

The Committee recommends that:

- *The federal government should prepare and maintain plans for comprehensive water development and management.*
- *Matching federal grants be available to the states for planning purposes.*
- *A coordinated, scientific research program be started.*
- *A periodic review be made of the supply-demand situation.*

What is quality water?

Practically all waterworks men agree that a "quality standard" is needed, but just what this standard should be is another question. In order to arrive at a starting point, M. D. Lubratovitch, director of public utilities, Duluth, Minn., and Earl H. Ruble, consulting engineer, Duluth, Minn., suggest the following quality standards as a basis for discussion:

1. Temperature—50°F or lower.
2. Turbidity—not to exceed 3 ppm.
3. Color—not to exceed 5 ppm.
4. Iron—suggested maximum of 0.10 ppm.
5. Manganese—not to exceed 0.50 ppm.
6. Total solids—maximum 300 ppm.
7. Taste—while an absolute taste standard is impossible, some standard for comparison is in order. The authors suggest that a statistically random and representative selection of consumers be made for a taste test and if 75% rate the water as "good" or "excellent," using the general criteria that the observer does not detect any flavor of salty, sweet, sour or bitter character and that there is no taste response similar to the "hotness" of pepper or the "coldness" of mint, and that there is no medicinal, fishy, weedy or musty character to the flavor, the water would be regarded as a quality water so far as taste is concerned.
8. Odor—a threshold value of 0 or 1.
9. Nitrate nitrogen—1.0 ppm.
10. Detergents—(ABS test) maximum of 0.05 ppm.
11. pH—necessary for stability from the viewpoint of corrosion and scale control. Since high pH waters sometimes do not taste good, the taste standard would cover this characteristic.
12. Adequacy and dependability—storage equal to two days' requirements, dual pumping facilities and a source which has no record of failure as to quantity, or an available secondary source.
13. Residual chlorine—not less than 0.40 ppm at consumer's tap if used for bactericidal purposes.
14. Coliform bacteria—not more than 1% of all standard 100 ml portions examined per month shall show presence of organisms of the coliform group.

While there are at least a hundred or more measurable quality characteristics which might be a part of a quality standard, the authors feel a quality standard should be limited, so far as practicable, to the following five basic characteristics:

1. Adequacy and dependability of supply.
2. Bacteriological safety.
3. Chemical safety.
4. Physical desirability.
    a) Appearance (color and turbidity)
    b) Taste
    c) Odor
5. Chemical compatibility
    a) Corrosion control
    b) Scale control

How banks help provide better water

Commercial banks extend credit, provide various other banking services and lend money to public and private water suppliers. Milton J. Redlich, vice-president of the Chase Manhattan Bank, indicates that all bond issues fall into these categories; general-obligation bonds with the full faith and credit of the municipality backing them, revenue bonds (which do not compete with other municipal projects regarding debt limitations) or some combination of these two.

The role of automation

Elwood H. Aldrich, engineer consultant of the American Water Works Service Company of Philadelphia, points out that automation cannot replace judgement but can perform quickly and accurately in many fields where human efforts cannot compete. Instrumentation does not provide automation but it is usually an important element in the performance and control of automatic operations.

Syndets support pathogen growth

Professor Beverly White Miller finds that synthetic detergents, regardless of pH or form (liquid or solid) *support* the growth of bacteria at specific concentrations. As the incidence of syndet contamination increases, so also does the possibility of harmful bacterial growth and contamination.

Of 25 syndets which Professor White and Sister Mary Raphael of Mary Manse College investigated, 21 encouraged the growth of *E. coli* and four did not. No correlation existed between the amount of growth and either the pH or form. The concentration of each

(Continued on page 40)

Announcing

The
METER
that
took the
time
TO
SAVE
MILLIONS
FOR THE
WATER INDUSTRY

1 PROTECTS YOUR PRESENT INVESTMENT

because your older Tridents can be converted simply by replacing standard parts with new Model 60 parts, giving you the advantages of this new meter at minimum cost.

2 PROTECTS YOU FROM FUTURE OBSOLESCENCE

because it was designed and manufactured in strict accordance with Neptune's "interchangeability" policy. Will not be obsoleted by developments that are now on the drawing boards.

3 PROTECTS YOU AGAINST UNNECESSARY REPLACEMENT COSTS

because it permits you to easily and quickly repair minor damage without having to scrap major units.

4 PROTECTS YOU AGAINST LOST REVENUE

because with its easily accessible change gears, minor variations in registration can quickly be calibrated to compensate for worn parts.

This new sealed meter
will save millions of dollars
for TRIDENT METER USERS
over the next few years. ▶

SEE FOR YOURSELF
HOW IT CAN WORK FOR YOU...

New

TRIDENT *model* **60**

Water Meter

NEPTUNE METER CO.
TRIDENT
WATER METER
NEW YORK

THE SEALED METER

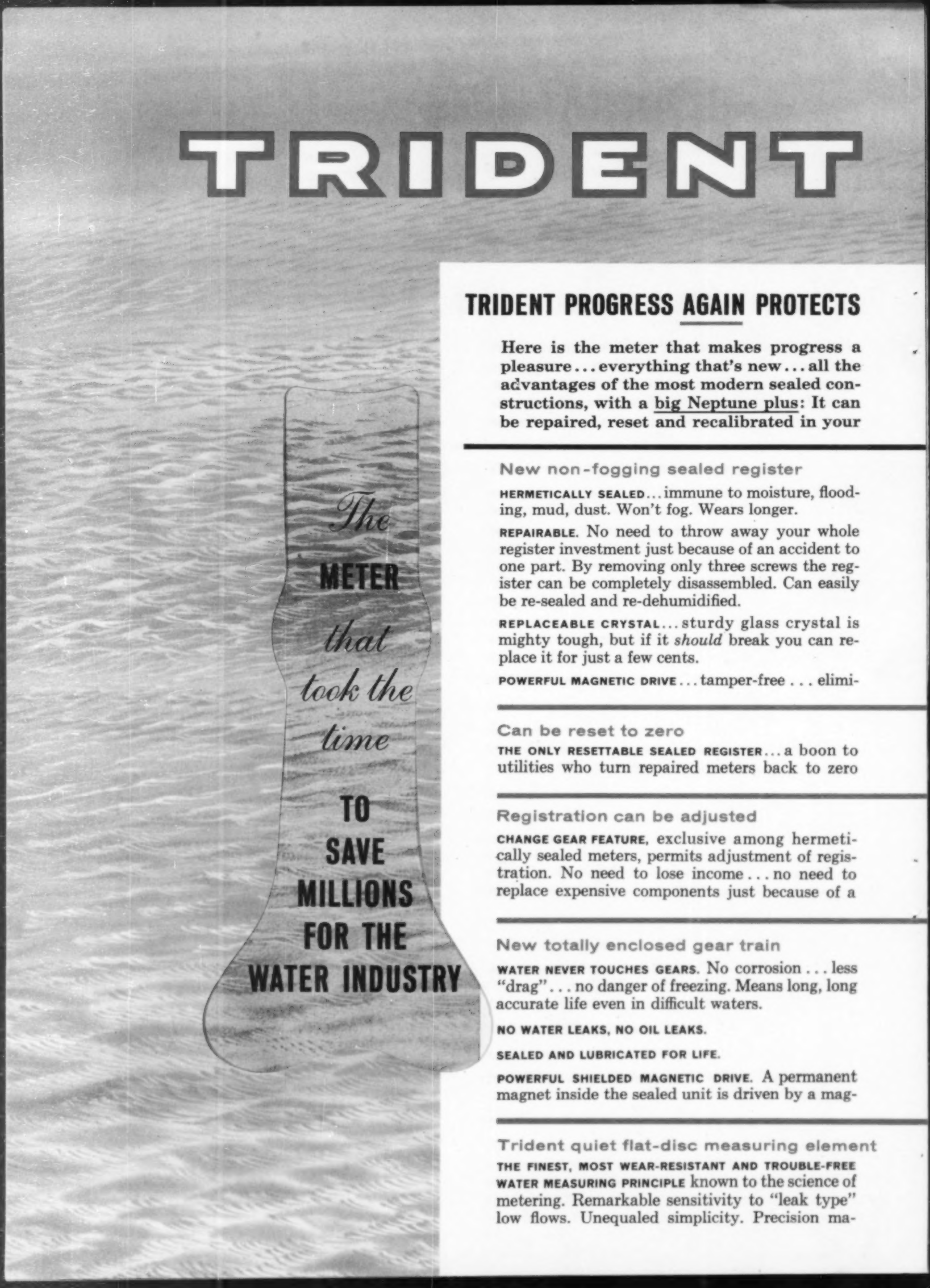
that protects your investment because

it can be repaired, reset and calibrated

economically in your own shop,

WITH COMPLETE INTERCHANGEABILITY OF PARTS...

neptune
METER COMPANY
Liquid Meter Division / 47-25 34th St., Long Island City 1, N. Y.


TRIDENT
The METER that took the time TO SAVE MILLIONS FOR THE WATER INDUSTRY

TRIDENT PROGRESS AGAIN PROTECTS

Here is the meter that makes progress a pleasure . . . everything that's new . . . all the advantages of the most modern sealed constructions, with a big Neptune plus: It can be repaired, reset and recalibrated in your

---

New non-fogging sealed register

HERMETICALLY SEALED . . . immune to moisture, flooding, mud, dust. Won't fog. Wears longer.

REPAIRABLE. No need to throw away your whole register investment just because of an accident to one part. By removing only three screws the register can be completely disassembled. Can easily be re-sealed and re-dehumidified.

REPLACEABLE CRYSTAL . . . sturdy glass crystal is mighty tough, but if it *should* break you can replace it for just a few cents.

POWERFUL MAGNETIC DRIVE . . . tamper-free . . . elimi-

Can be reset to zero

THE ONLY RESETTABLE SEALED REGISTER . . . a boon to utilities who turn repaired meters back to zero

---

Registration can be adjusted

CHANGE GEAR FEATURE, exclusive among hermetically sealed meters, permits adjustment of registration. No need to lose income . . . no need to replace expensive components just because of a

---

New totally enclosed gear train

WATER NEVER TOUCHES GEARS. No corrosion . . . less "drag" . . . no danger of freezing. Means long, long accurate life even in difficult waters.

NO WATER LEAKS, NO OIL LEAKS.

SEALED AND LUBRICATED FOR LIFE.

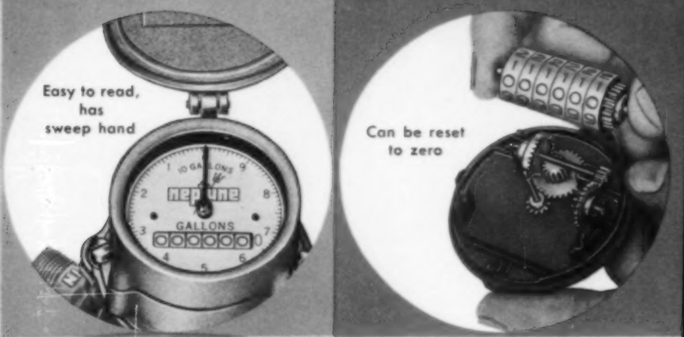
POWERFUL SHIELDED MAGNETIC DRIVE. A permanent magnet inside the sealed unit is driven by a mag-

---

Trident quiet flat-disc measuring element

THE FINEST, MOST WEAR-RESISTANT AND TROUBLE-FREE WATER MEASURING PRINCIPLE known to the science of metering. Remarkable sensitivity to "leak type" low flows. Unequaled simplicity. Precision ma-

model 60


Easy to read,
has
sweep hand
10 GALLONS
1
2
3
4
5
6
7
8
9
0
neptune
GALLONS
Can be reset
to zero

YOUR METER INVESTMENT...

own shop . . . at low cost, with no special skills required. Parts are interchangeable . . . you can easily convert and modernize your older Tridents at far less than "scrap and replace" costs.

---

nates all rotary seals or packing glands which might cause leaks.

SWEEP TEST HAND...customer can see it move, prove to himself whether leaks are wasting water in his house. By using simple Neptune test ring which sits on top of register, meter can be tested without any disassembly.

FITS OLDER TRIDENTS, TOO. Permits low-cost modernization of all your Trident disc meters from ⅝ to 2 inches. When you standardize on Trident you are sure to save time and money and protect the capital you have invested.

---

before placing them in customers' houses... good public relations.

---

little wear or mineral deposits. Keep them working years longer by use of inexpensive change gears to restore accuracy.

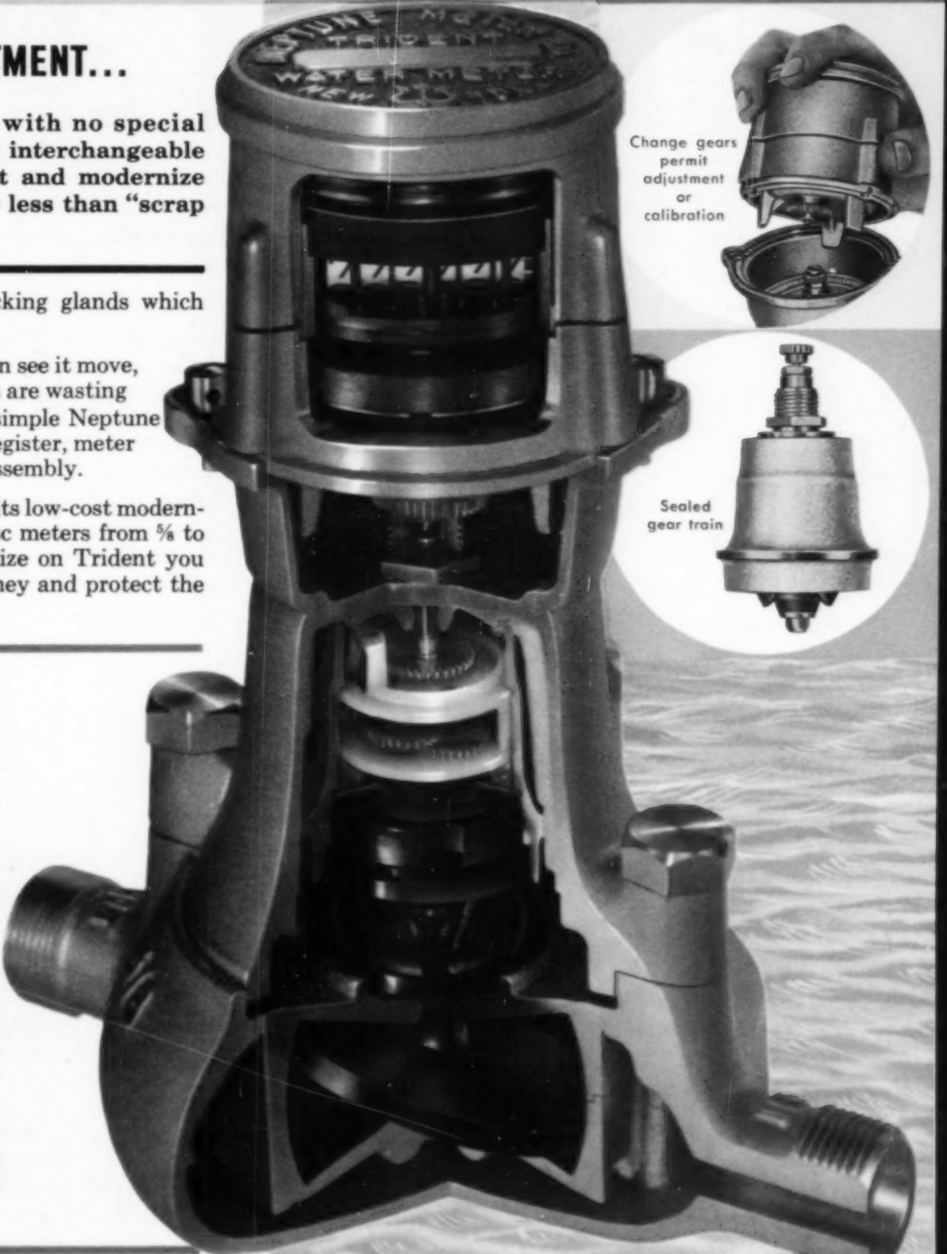
---

net below. Shielded against tampering. Cannot be disabled by magnetic particles that may accumulate over years.

FITS OLDER TRIDENTS, TOO. Interchangeable with standard Trident gear trains in all ⅝, ¾, and 1-in. Trident Disc Meters made in the past 50 years.

---

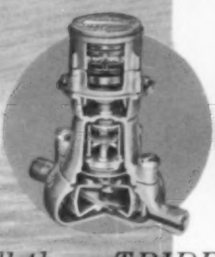
chined to minimize effects of wear . . . keeps its accuracy longer. Quieter, with Neptune thrust roller and bearing plate to prevent piston slap. Replaceable half-balls. Sand ring keeps abrasives away from spindle, block, and ball.


NEPTUNE METER
TRIDENT
WATER METER
NEW YORK
Change gears
permit
adjustment
or
calibration
Sealed
gear train

neptune

Now all these TRIDENT combinations to fit your needs

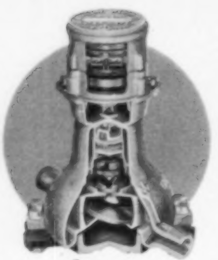
Trident Split-case meter with Model 60 sealed register and Model 60 gear train.



Trident with Model 60 sealed register and standard oil-enclosed gear train.

Trident with standard register (round reading or straight reading) and new Model 60 sealed gear train.

Trident with standard register (round reading or straight reading) and standard oil enclosed gear train.



Plus the same combination in Trident Frost-proof meters for colder climates where freezing is a problem.

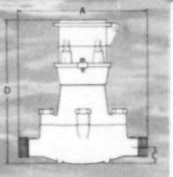
• •

Trident INTERCHANGEABILITY protects your investment
. . . now and in the future.

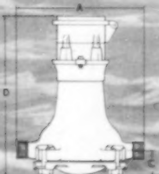
Suddenly all your Tridents are modern as tomorrow. Trident's exclusive interchangeability lets you substitute the new Model 60 Sealed Register and/or Model 60 Sealed Gear Trains in any of your older Trident Meters. When, after test, you decide one or both of these new magnetically driven sealed units will reduce overall operating costs in your system, you can immediately start a program of modernizing your older meters.

Trident Model 60 Dimensions & Rates of Flow

SPLIT CASE METERS



FROST-PROOF METERS



	SIZE	A LENGTH IN.	WIDTH IN.	C BASE TO CENTER-LINE OF PIPE	D HEIGHT, IN.		*APPROX. WEIGHT LBS.	RATE OF FLOW
					MODEL 60 REGISTER	STANDARD REGISTER		
SPLIT CASE METERS	⅝ (and ⅝ x ¾)	7½	5	1	8½	7¾	10½	20
	¾	9	5⅝	1 3⁄16	9	8⅛	12	30
	1 (and 1 x 1¼)	10¾	7½	1⅝	9½	8¾	20½	50
FROST-PROOF METERS	⅝ (and ⅝ x ¾)	7½	5½	1¾	9⅝	8¾	11½	20
	¾	9	6	1¾	9⅝	8¾	15½	30
	1 (and 1 x 1¼)	10¾	9⅜	2	10¼	9½	27½	50

*Weight varies by a few ounces depending on register and gear train selected.

neptune
METER COMPANY
Liquid Meter Division
47-25 34th St., Long Island City 1, N. Y.

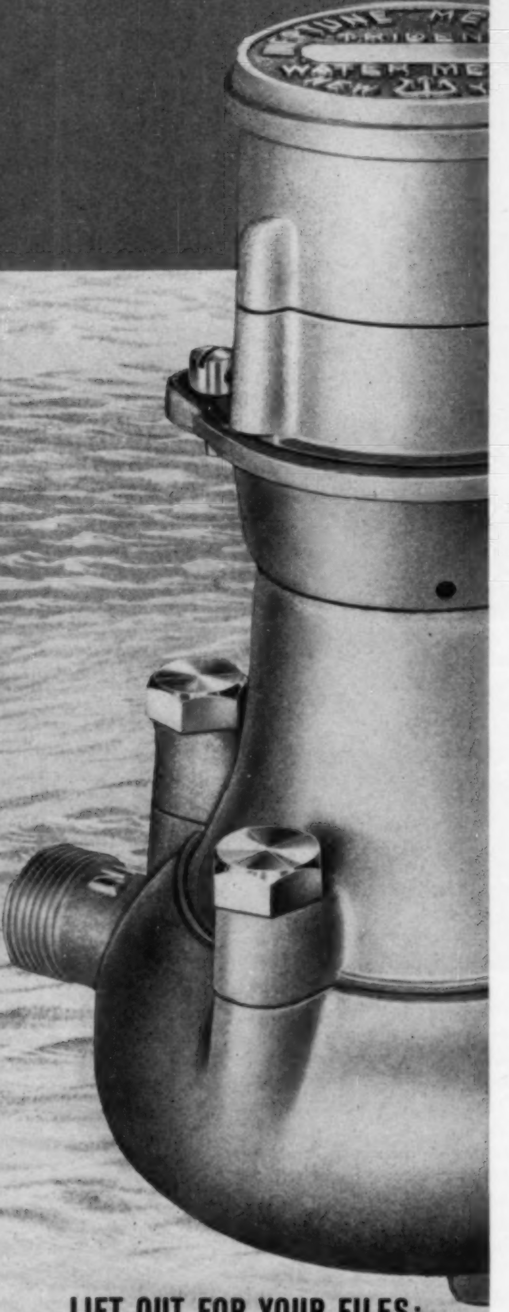
DISTRICT OFFICES

ATLANTA 18, GA. ....200 Permalume Pl., N.W.
BOSTON 16, MASS. ....250 Stuart St.
CHICAGO 24, ILL. ....4048 West Taylor St.
DALLAS 7, TEXAS ....315 Cole St.
DENVER 7, COLO. ....3815 Forest St.
LOS ANGELES 22, CALIF.....5540 E. Harbor St.
LOUISVILLE 17, KY. ....320 Eastern P'kway

NEW YORK CITY ....22-22 Jackson Ave.
Long Island City 1, N. Y.
NO. KANSAS CITY 16, MO.....25 West 15th St.
PHILADELPHIA AREA ....7 Bala Ave.
Bala-Cynwyd, Pa.
PORTLAND 10, ORE.....2680 N.W. Thurman St.
SAN FRANCISCO—BAY AREA
101 Rollins Rd., Millbrae, Calif.

***IN CANADA:* NEPTUNE METERS LTD.**
1430 Lakeshore Rd., Toronto 14, Ont. • Calgary, Alberta
Montreal, Quebec • Vancouver, B. C. • Halifax, N. S. • Winnipeg, Manitoba

FORM NO. 426 PRINTED IN U.S.A. 30M/12/60



Everything that is newest in a water meter is in

TRIDENT

model 60

. . . and interchangeability can work for you now!

All the advantages of the New Model 60 can be built into your system right now. The "interchangeable unit" principle on which all Trident Meters are designed and manufactured makes it possible to integrate the Model 60 into your present system without jeopardizing present or future investments in meters.

At very low cost, all present users of Trident Meters can have all the advantages of a sealed meter by just adding the Model 60 Register and Sealed Gear Train to any Trident.

When you order Trident Meters, the investment of your company or your taxpayers (for which you are responsible) is protected all ways . . . past, present and future. You don't need to anticipate scrapping Model 60 meters because of *later* improvements. The Model 60 has today anticipated and is adaptable to future developments not yet off the drawing boards.

And for those users who prefer the standard Trident Meter, these fine meters will still be manufactured. Standard gear trains and registers will be available as before, both as new meter components and as repair parts.

TAKE THE FIRST STEP TODAY...

The new Model 60 can produce some impressive savings in your operating costs . . . eliminate lost revenue . . . and give you better over-all operating efficiency. A discussion with a Neptune representative will show you how Trident Model 60 meets your specific requirements. For further information write or phone Neptune Meter Company, Liquid Meter Division, 47-25 34th Street, Long Island City 1, N. Y. or the nearest Neptune District Office.

LIFT OUT FOR YOUR FILES:

THIS FOUR PAGE INSERT GIVES YOU QUICK BUYING FACTS.

←

(Continued from page 33)

syndet, from 0.25 ppm to 10.00 ppm, did not produce a uniform pattern of growth. Some growths increased with stronger concentration, others reached a peak at 1.0 or 2.0 ppm and declined thereafter.

Because the use of synthetic detergents is rapidly increasing, more water systems find larger amounts of these molecules present. As the incidence of syndet contamination increases, so also does the possibility of harmful bacterial growth and contamination, resulting in human disease and possible epidemics.

Algae removal by microfilters

Microfilters have, during a 15-year period of operation in Canada, proven their value under prescribed conditions. They effectively remove algae, treatment cost is normally low, and they can be used either as the sole treatment for water supplies or as primary treatment ahead of filtration. However, to be effective, Dr. A. E. Berry, general manager, Ontario Water Resources Commission points out that the water utility planning to install microfilters or microstrainers must:

- *Carefully evaluate conditions to see if the units will prove serviceable.*
- *Design the installation in accord with proved practice.*
- *Provide intelligent operation.*

A series of nine investigations made over a period of years on the Belleville, Ontario, plant, showed an average reduction of net plankton of 89.3%. (Net plankton is defined as those algae of sufficient size to be retained on passing the water through number 20 bolting silk.) A comparison of results obtained at the plant in 1957 (prior to using microstrainers) and in 1959 reveals that:

- *Total washwater, including that used for the microstrainers, dropped from* 9.7% *to* 5%, *of which* 2.7% *in* 1959 *was for the microstrainers.*
- *Filter backwash frequency dropped from* 1,074 *to* 262 *for the year.*
- *The average filter run rose from* 14.3 *hours to* 52.3 *hours.*
- *Average head loss on the filters dropped from* 6.5 *to* 4.4 *feet.*

Aluminum sulphate consumption was reduced from 91,900 pounds in 1957 to 29,900 pounds in 1959.

The Belleville installation consists of four 7½-foot-diameter-by-5-foot-wide machines with mark I fabric designed for a maximum flow of 8 mgd. They precede rapid sand filtration. The approximate cost of the installation, including the extension of the building to house the units, was $150,000; or $18,700 per mgd capacity.

Filters—anthracite or sand?

W. R. Conley of General Electric indicates that the company's experience in running the Hanford plant for the Atomic Energy Commission found a combination anthracite-sand filter to be superior to either type alone. The criterion was the ability to produce high-quality water at high filtration rates with long filter runs. On this basis six inches of 0.43 mm effective size sand and 24 inches of 0.9 mm effective size anthracite provide the superior combination.

Increasing the flow through the plant resulted in large capital savings. Consequently, flocculation and settling times are brief; filtration rates high. Most plants operate at six to seven gpm per square foot. Air binding prohibits greater flows. Backwash water uses only 1 to 2% of the total flow.

Chemical treatment has a greater effect on water quality and head loss than filter-media composition or any other plant variable. Operators control floc breakthrough by reducing the coagulant feed and adding microscopic parts of polyacrylamide or polysacchaside to the filter influent.

For better water works, improve management

Speaking for the A.W.W.A. Advancement Committee, John H. Murdoch, Jr., pointed out the need for an association-wide drive for the training of water-works managers. These men can make or break a public water system and, unless they can speak with confidence, courage and conviction based on a sure knowledge of water-works principles and with skill in the arts of organization and management, local systems will be inadequate.

For discussion, the committee suggested a course covering the following 19 subjects:

1. Organization of a water-supply system.
2. Responsibilities of a water-supply system.
3. Legal problems of a water-supply system.
4. Practical arithmetic.
5. Formulas.
6. General properties of materials.
7. Elementary chemistry.
8. Practical geometry and trigonometry.
9. Elements of fluid mechanics.
10. Modern supervision.
11. Economics.
12. Water supply.
13. Sanitary bacteriology.
14. Purification of water.
15. Accounting for water-supply systems.
16. Financing water-supply systems.
17. Engineering for water-supply systems.
18. Maintenance of water-supply systems.
19. Report writing.

Suitable textbooks are available for 12 of the subjects and a long established and experienced correspondence school is ready and willing to offer a course or courses in water-works management provided AWWA will sponsor the course and give it energetic and continued backing. The school would expect AWWA to share in the work of choosing the subjects to be offered and to have original manuscripts prepared for each subject. The school would convert the manuscripts into textbooks most useful for correspondence-school use and would conduct instructions and give examinations.

Prevent rather than cure

To prevent the contamination of our water resources, Paul Bolton of Henningson, Durham and Richardson (consulting engineers, Omaha) believes a nationwide master plan is desirable. This preventive program should include:

- *Acceptable laws and regulations.*
- *More and better water-works personnel.*
- *Adequate well-drilling codes.*
- *Plumbing codes which really protect consumers.*
- *Uniform standards based on comprehensive information.*
- *Control of new products which may contaminate water resources.*
- *Research and development on an aggressive scale.*
- *Teamwork of all interested in water management.*

The preservation of our waters in a potable state is imperative if we are to continue to be a healthy nation blessed with a balanced economy. The solution for the future is prevention as opposed to the present "curative" function. ◄◄

Layne SINCE 1882

Layne SINCE 1882

NIGHT AND DAY

twenty-four hour service

PUMPS • WATER WELLS • WATER TREATMENT

Layne knows that an unfailing supply of water is vital, whether it be for municipal, industrial or agricultural use. With Associate Companies located throughout the world, Layne can provide the speed, the trained technicians and the quality parts to remedy your water problem. Over 75 years of experience accounts for the ever increasing list of customers who depend on Layne for service. For service night and day, call the Man From Layne.

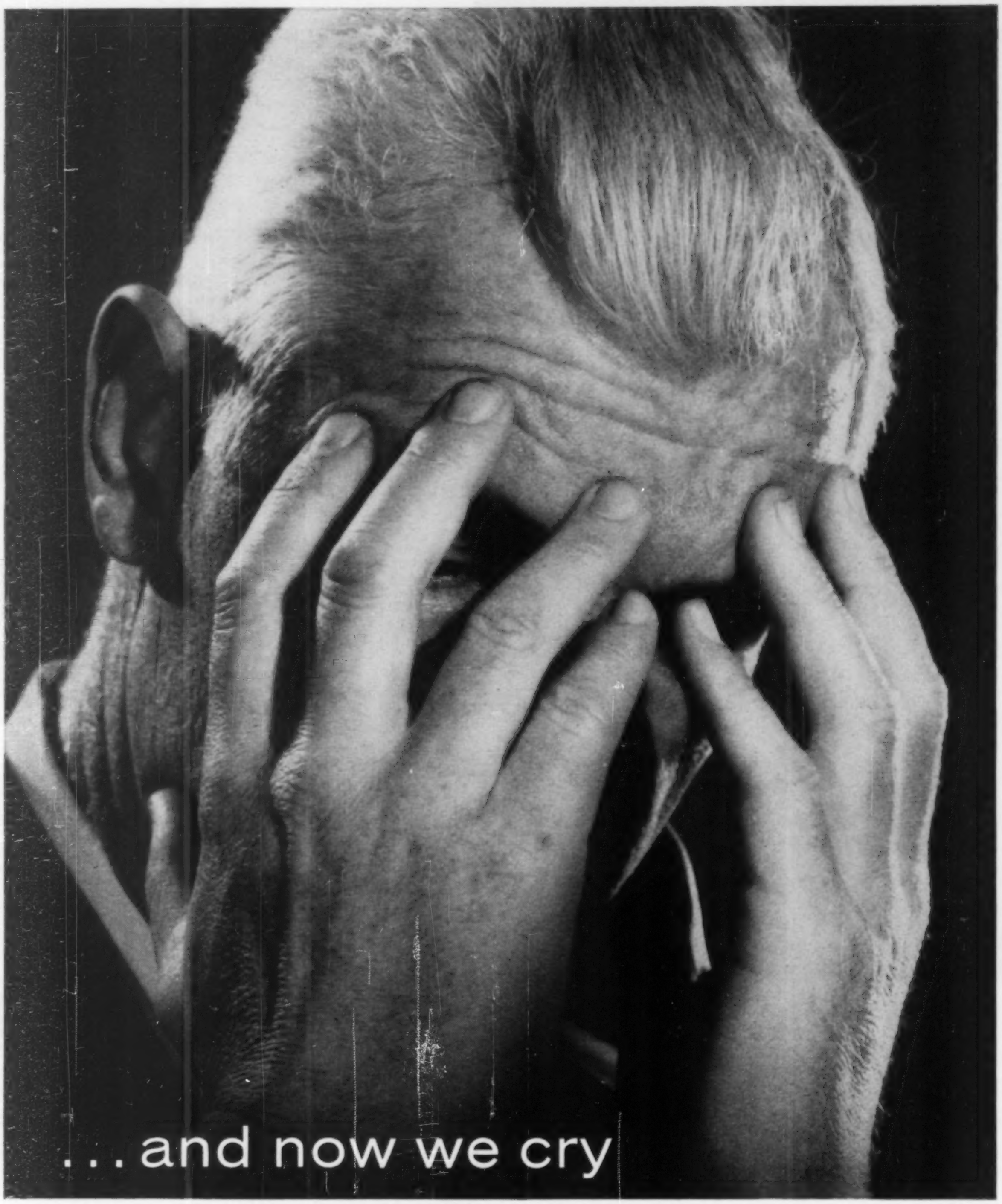
Write for Layne Service Bulletin 100.

LAYNE OFFERS COMPLETE WATER SERVICE: Initial Surveys • explorations • recommendations, site selection • foundation and soil-sampling • well drilling well casing and screen • pump design, manufacture and installation • construction of water systems • maintenance and service • chemical treatment of water wells water treatment—all backed by Layne Research. Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.

Layne SINCE 1882

COMPLETE WATER SERVICE

LAYNE & BOWLER, INC., MEMPHIS
General Offices and Factory, Memphis 8, Tenn.
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD
SALES REPRESENTATIVES IN MAJOR CITIES



Where were the voices before this tragedy occurred that are raised in crusade chorus now? Who heard the pleas for better fire protection before this deadly reminder? When will we forget the tragedy that now prompts action . . . the reason now we cry?

Gamewell Master Fire Alarm Boxes can prevent many tragedies. This direct-to-Fire-Department system saves time — and on-time equipment and men save lives and property.

The Gamewell Company offers your community *positive* fire protection, backed by the largest plant in the world engaged exclusively in the manufacture of fire alarm systems and emergency signaling equipment. Your community deserves this proven system. Contact the Gamewell office near you. Safety is everybody's business — *our* profession.

Write The Gamewell Company, 1243 Chestnut Street, Newton Upper Falls 64, Mass. A Subsidiary of E. W. Bliss Company.

BLISS Gamewell®

FIRST . . . WHEN SECONDS COUNT

What Oklahoma Cities Want in City Managers

College training, plus a master's degree in Public Administration, along with appropriate experience, all rank high on the list of requirements for city managers in Oklahoma.

A study by the Bureau of Government Research, University of Oklahoma, showed that 26 of 29 managers hold college degrees and three of these hold the Master of Public Administration degree. Three hold no degree.

One indication of the survey is that there is close correlation between the breadth and extent of education and experience, or qualifications, and the salaries paid to the managers. Apparently, the more suited the manager's qualifications to the management profession, normally the higher the salary.

Another survey conclusion is that the larger the city's size, the higher the salary paid to the manager. Managers' salaries for the survey cities ranged from $4,420 for cities of 1,000 to 2,500 population to $19,500 for the one reporting city of over 300,000 population.

Tenure of city managers in Oklahoma appears to be relatively short, averaging from 2½ to four years. One reason cited for short tenure was that many young managers will start their careers in small cities and then may move to a more attractive position in another city. ◄◄

Municipal Power Systems Lower Rates

Certain municipally owned electric systems have lowered their rates, according to the American Public Power Association. In Denison, Iowa, the Utilities Board adopted a new all-electric rate for those having electric water heaters and large electric appliances. Customers using 600 kw-hrs per month now pay $10.70, representing a savings of $3.25. Bonners Ferry, Idaho, dropped rates to urban customers 8.5%, rural residential customers, 10.3%; commercial water and space heating, 19.8%; industrial, 13.8%; and water pumping, 12.0%.

The Benton County Public Utility District, serving Kennewick, Wash., as reduced rates to commercial and industrial customers, following a rate reduction to residential consumers last year. And the Clatskanie (Ore.) People's Utility District cancelled all bills for April, for the sixth time in as many years. ◄◄

Air Pollution Control News

A First

The California State Board of Public Health has adopted a motor-vehicle crankcase-emission standard, permitting an allowable hydrocarbon emission of 0.15% by weight of the supplied fuel at the three specified engine-operating conditions. This corresponds to about an 80% reduction from the present level of crankcase emissions. The new standard provides a tool for the State Motor Vehicle Pollution Control Board to make crankcase-emission control devices mandatory on all California motor vehicles. The latter body, meanwhile, has announced that Donald A. Jensen, formerly chief administrator of Marin County, has been appointed executive officer of the Board.

Architects Think Ahead

Now architects are beginning to design buildings with air pollution in mind! Eero Saarinen, architect for the new and controversial United States embassy in London, said that the building would look very different in 50 years. While admitting that it might be a bit too gaudy for staid Grosvenor Square, he said that London's soot and rain will change that impression. The Portland stone will grow darker, the gold-anodized trim "will tone down some" and even the huge bronze eagle atop the structure will appear less obtrusive.

Health Hazard

In an end-of-the-year report, Dr. Herman E. Hilleboe, New York State's commissioner of health and chairman of the State Air Pollution Control Board, said: "There is a growing volume of evidence to suggest that air pollution is taking a significant toll in death and illness from such associated diseases as cancer, heart disease, respiratory diseases and allergies. The effects range from severe and immediate to insidious and long-range, with evidence about the latter slowly but surely accumulating. . . . Damage to the health of our citizens ten years in the future must be prevented by action now."

Overall View of Atmospheric Pollution

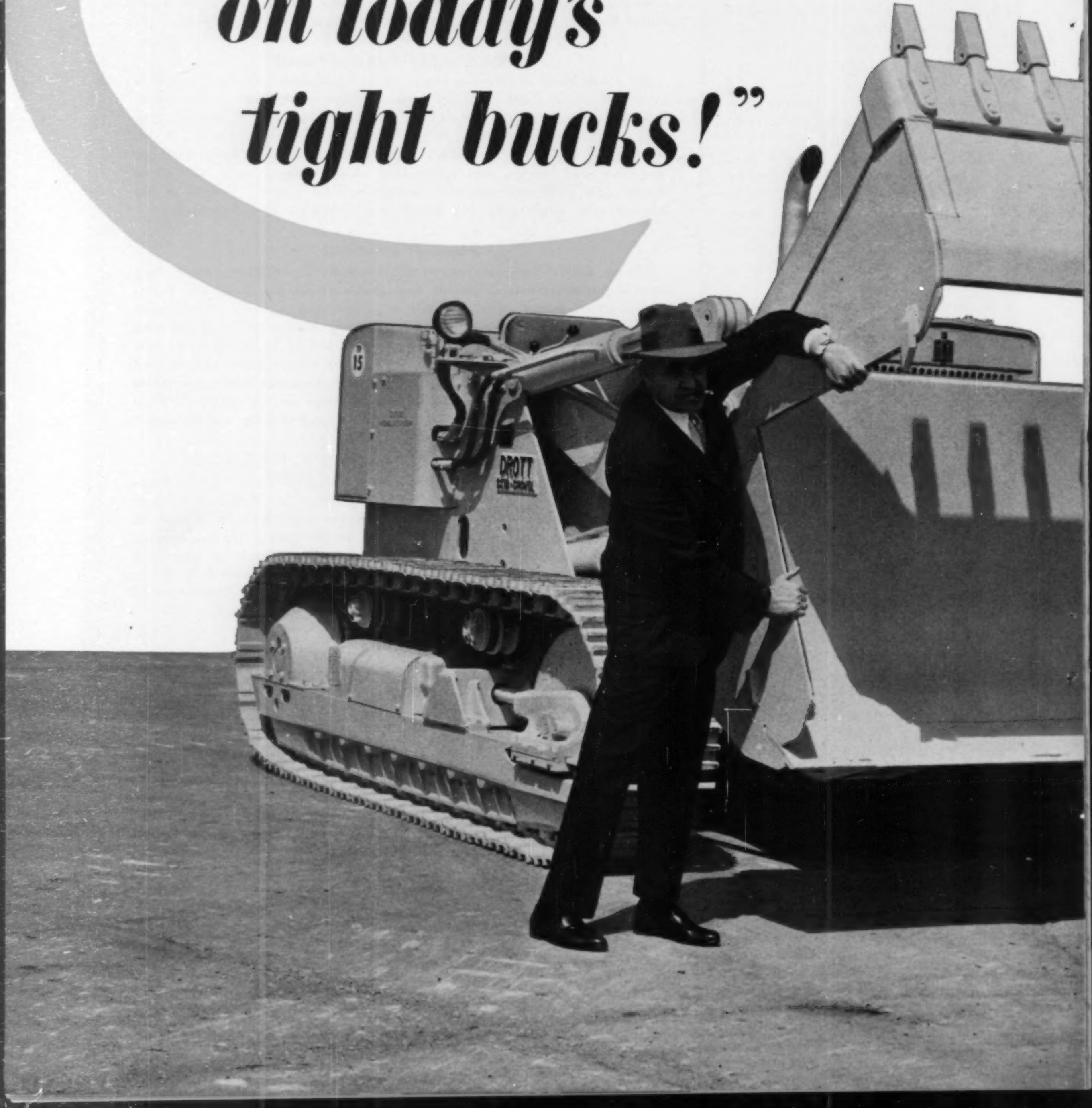
"Atmospheric Pollution, the Problem—An Overall View," by Dr. Peter V. V. Hamill, chief, Epidemiologic Investigations, Air Pollution Medical Program, Public Health Service, may be obtained free of charge by writing to the Division of Air Pollution of the Public Health Service, Washington 25, D. C. Dr. Hamill presented the paper at the 12th annual meeting of the American Academy of Occupational Medicine and it was printed in the September 1960 issue of the "Archives of Environmental Health" of the American Medical Association.

Translation of Russian Studies

The fourth volume in a continuing survey of Russian literature on air pollution and related occupational diseases, being conducted by Dr. Ben S. Levine under a Public Health Service research grant, is available for $4 a copy from the Office of Technical Services, United States Department of Commerce. This latest volume of selected air-pollution literature, translated by Dr. Levine, contains several reports on the use of sanitary clearance zones—broad belts of trees and shrubbery—to abate air pollution in industrial areas. Studies in the field of "phytoncides," natural bacterial substances emanated by some plants, and the results of studies of the effectiveness of foliage in city parks in reducing street noises are covered.

—Prepared by Kenneth Kowald

"Mister...it
clam-action to 'put the
on today's
tight bucks!"



takes bite'

"15 minutes on this new '15' Four-in-One will prove you can't afford to own any limited-duty bucket!"

"Sure, a racehorse loader with a 'lock-jawed' bucket may gain you a few minutes a day—just dipping from a stockpile and dumping in a truck!

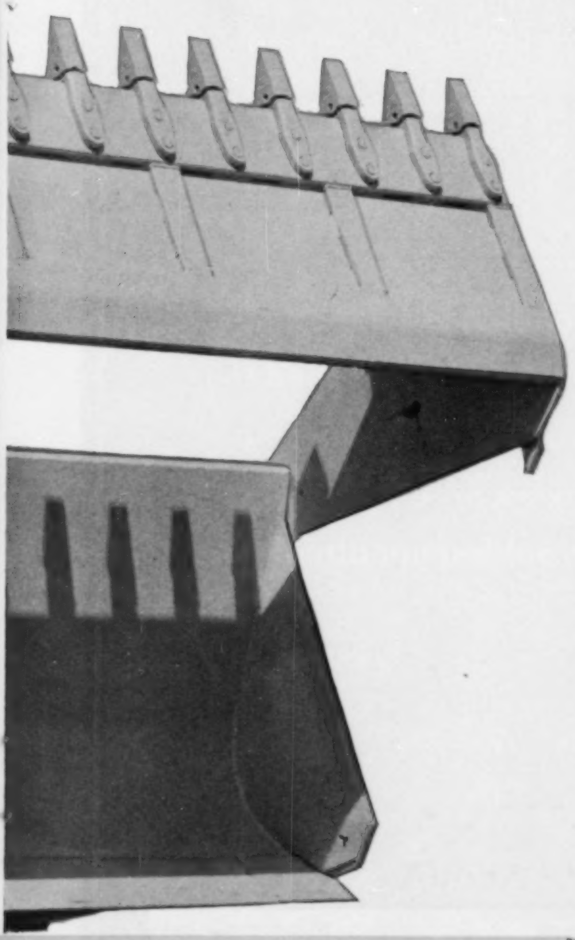
"But anywhere else we double-challenge you to stack any limited-duty loader against a new '15' clam-action 4-in-1, and see what happens. We can tell you right now what'll happen no matter what size, shape or color the single-action rig is, or how shifty it is! It'll get clobbered! And, profitwise, so will the guy who buys the obsolete bucket without bothering to find out what a slew of jobs the new '15' Four-in-One does.

"You can get the straight dope, first hand in 15 minutes, on this new TD-15 Four-in-One. In just one quarter-hour, you can prove what it means to own the one and only machine that doubles for a whole spread of contracting equipment—at the touch of a hydraulic lever.

"In only 15 minutes, you can put the 'bucket with the bite' through its paces. Prove how you get four, or a dozen, or more, full-sized, full-capacity machine actions with the exclusive 4-in-1. Prove you get hundreds of job-handling working positions with each action.

"See how new TD-15 Four-in-One get-up-and-go is tailored to set a fast work pace, with the single-stick shift, full-reverse transmission, and plenty of hydraulic control power.

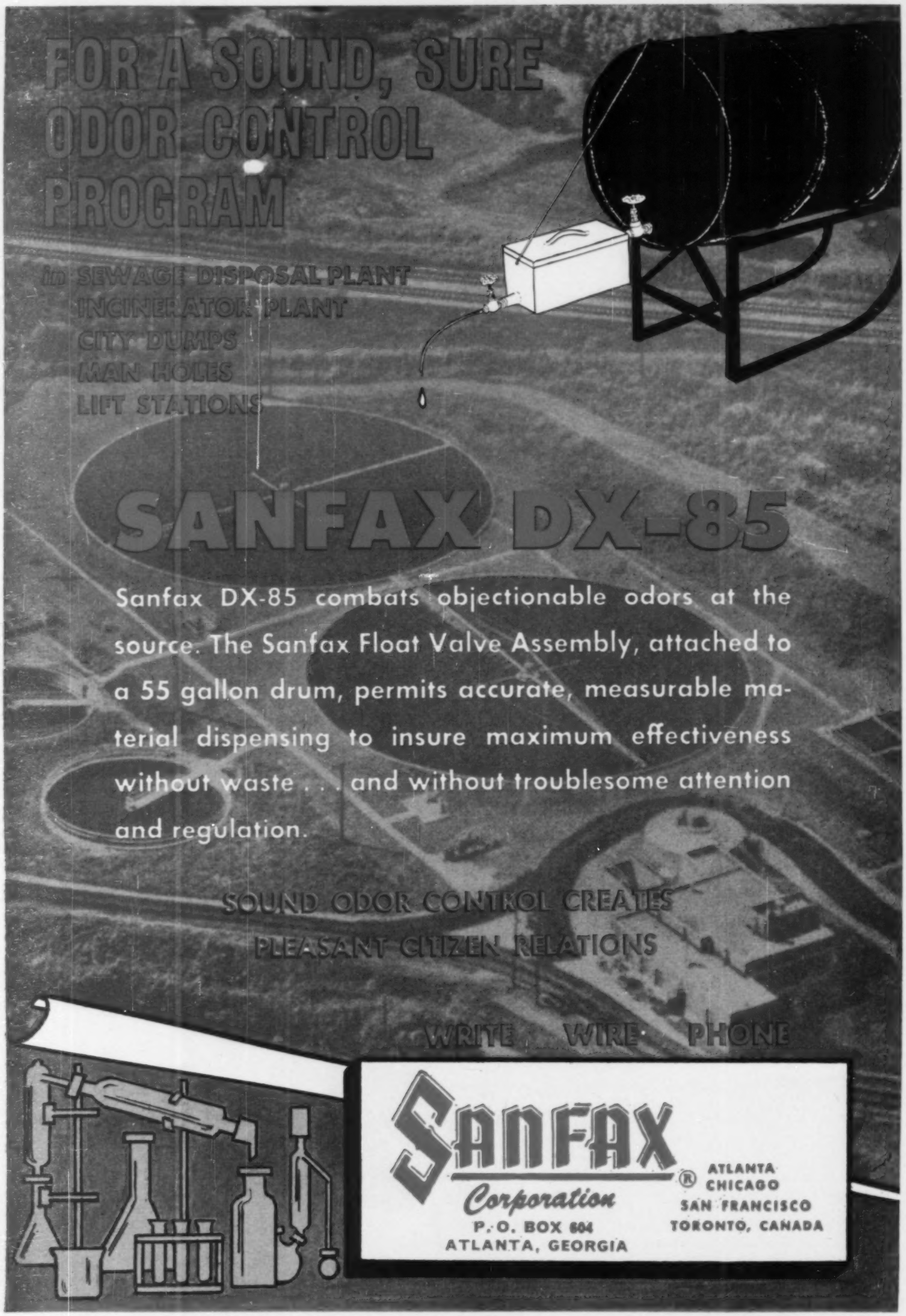
"C'mon in now—take 15 minutes on a new '15' Four-in-One. Or call us for a demonstration on your job. See for yourself why you can't afford to own any obsolete 'lock-jawed' loader."



International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

"'Doze, grade, grab, spread, do cut-and-fill work, strip, load sticky materials, outshovel a power shovel, pick up loose materials (without chasing them), grub, load 'impossibles.' Do dozens of other profitable jobs with the new '15' Four-in-One that single-action loaders can't touch.'"



FOR A SOUND, SURE ODOR CONTROL PROGRAM

in SEWAGE DISPOSAL PLANT
INCINERATOR PLANT
CITY DUMPS
MAN HOLES
LIFT STATIONS

SANFAX DX-85

Sanfax DX-85 combats objectionable odors at the source. The Sanfax Float Valve Assembly, attached to a 55 gallon drum, permits accurate, measurable material dispensing to insure maximum effectiveness without waste . . . and without troublesome attention and regulation.

SOUND ODOR CONTROL CREATES
PLEASANT CITIZEN RELATIONS

WRITE . . . WIRE . . . PHONE

SANFAX® *Corporation*
P. O. BOX 604
ATLANTA, GEORGIA

ATLANTA
CHICAGO
SAN FRANCISCO
TORONTO, CANADA

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Street Lighting Refractors

100 Municipal street lighting and consulting engineers will want a copy of this 24-page, 2-section booklet, "Design and Application of Holophane Prismatic Street Lighting Refractors." It can be obtained from HOLOPHANE CO., INC., 342 MADISON AVE., NEW YORK 17, N. Y.

Sprinkler Systems for City Parks

101 An important key to healthier, better-looking park turf areas is a successful irrigation system. For up-to-date information on low-cost sprinkler systems that will help keep municipal green areas greener, write BUCKNER MFG. CO., INC., P. O. BOX 232, FRESNO 8, CALIF.

Make Ice Control Plans in Summer

102 MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC7, 110 W. WACKER DRIVE, CHICAGO 6, ILL., has news of an ice control program for municipalities that will reduce winter-time accidents and create good public relations. Ask about the Safe-T-Salt program.

A New Water Meter

103 NEPTUNE METER CO., LIQUID METER DIV., 47-25 34TH ST., LONG ISLAND CITY 1, N. Y., announces availability of literature on the new Trident Model 60, its newest sealed water meter which eliminates lost revenue and provides lower operating costs.

A Cure for Surfacing Problems

104 A fibre-filled emulsified asphalt is bringing back both color and smooth surfacing to play areas, walks and drives, eliminating headaches brought on by tough, abrasive pavements. It's called Walk-Top. For details, write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

Traffic Delineators

105 New to the traffic guide equipment line of RADIATOR SPECIALTY CO., CHARLOTTE, N. C., are these SAFE-T-POST solid color poly-vinyl chloride traffic delineators for parking lot, highway and intersection applications. Bulletin includes specifications and installation details.

Improved Curb Valve

106 Illustrated folder and test report gives full information on the Oriseal curb valve, which has gained acceptance in the water works field and features lifetime easy turning and positive sealing action. Write MUELLER CO., DECATUR, ILL.

Welded Steel Pipe for Water, Sewage Lines

107 *Catalog* WSP-11859 contains 38 pages of important information on Armco welded steel pipe. Data tables, applications, specifications, fittings, joints, linings, etc. included. Write ARMCO DRAINAGE & METAL PRODUCTS, INC., 11859 CURTIS ST., MIDDLETOWN, OHIO.

Battery Powered Truck Crane

108 Vehicle-mounted, vehicle battery-operated crane, new Model ROC-24-LC, makes material handling a one-man operation. Offers 3,500-pound capacity, 360° rotation, 9-foot boom (standard). For illustrated literature, specifications, write AUTO CRANE CO., 7214 S. NORWOOD, TULSA 12, OKLA.

Anti-Corrosive Paints

109 *Catalog* No. 61A describes the technical features of how lead-suboxide, Pb_2O, is employed in metal protective paints to produce rust-inhibitive coatings with simplified maintenance. Write SUBOX, INC., HACKENSACK, N. J.

Automatic Parking Control

110 Want to solve off-street parking problems? Then send for facts on Parcoa, an automatically controlled completely integrated parking system that gives around-the-clock parking control. Write JOHNSON FARE BOX CO., 4611 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

Mechanized Refuse Collection Equipment

111 *Catalog Section* 10, supplies facts on safe, efficient, self-loading packer for containerized and manual collection routes; *Catalog Brief* 160, unit for efficient short haul container service; *Brochure* 6073-A, system that handles converted Dumpster containers up to 12 yards. Write DEMPSTER BROTHERS, INC., DEPT. DX, KNOXVILLE 17, TENN.

Transistorized Pipe Detector

112 *File* No. AC-148 gives specifications and features of the Model "808," a thoroughly proven pipe detector which operates efficiently under varying temperatures. Write COMPUTER-MEASUREMENTS CO., UTILITIES INSTRUMENTS DIV., 12970 BRADLEY, SYLMAR, CALIF.

Police Signaling Systems

113 A new Flexalarm system for public buildings, schools, institutions, coded fire alarm system, and new code-voice-system—information on all, as well as free survey of your city's fire alarm requirements, available from THE GAMEWELL CO., 1284 CHESTNUT ST., NEWTON UPPER FALLS 64, MASS.

Truck-Mounted Materials Spreaders

114 These units spread sand, cinders, chips, salt, calcium chloride. They're designed to cut labor, time and equipment expense. Catalog gives full facts and specifications. Case history reports also available. Write FOX RIVER TRACTOR CO., ROAD MACHINERY DIVISION, 1020 N. RANKIN ST., APPLETON, WIS.

Digs Service Line Trench

115 The Ditch Witch M-322 Trencher is a one-man operated, self-propelled unit that trenches at speeds of 1½ to 12 fpm. It's widely used by municipalities for low-cost trenching for water service lines and construction work. For details, write THE CHARLES MACHINE WORKS, INC., 1959 WEST FIR, PERRY, OKLA.

Control Sewage Grease & Odor

116 . . . economically by trickling a few ppm of Ozene into your sewage system. It successfully emulsifies grease to keep the system free-flowing, and reduces maintenance in trouble spots, such as, sludge lines, settling tanks and filter beds. Write for the new booklet to SOLVAY PROCESS DIV., 61 BROADWAY, NEW YORK 6, N. Y.

Degrits Sewage

117 Bulletin No. 2508 describes a new method for removing and washing grit from raw sewage and settled sludge. For a copy, write DORR-OLIVER INC., STAMFORD, CONN.

Municipal Chemicals

118 Chemicals for every municipal purpose—sewage specialties, insecticides, weed killers, equipment maintenance—CARDINAL PRODUCTS CO., LEVITTOWN, N. J., will be glad to provide detailed information on request.

Quick, Vivid Photocopies

119 At the touch of a button the new Vivicopy 12 will give you vivid, permanent copies of all important papers. Write for descriptive booklet to PHOTOCOPY PRODUCTS, SMITH-CORONA MARCHANT, 410 PARK AVE., NEW YORK 22, N. Y.

They Melt Snow

120 New bulletin describes thermal snow melters (stationary, semi- and fully-mobile types) with capacities ranging from 25 to 75 tons per hour of dry snow. Fuel consumption, power, physical sizes given. Write THERMAL RESEARCH & ENGINEERING CORP., CONSHOHOCKEN, PA.

Intake-Trash Rakes

121 Intake-trash removal becomes a one-man operation, when Leonard non-channel-guided trash rakes are on the job delivering savings in reduced head loss. *Bulletin* 02B9207 points out how they roll right down on the existing rack bars, whether inclined or vertical. Write ALLIS-CHALMERS, HYDRAULIC DIV., YORK, PA.

Transmission Systems for Telemetering and Control

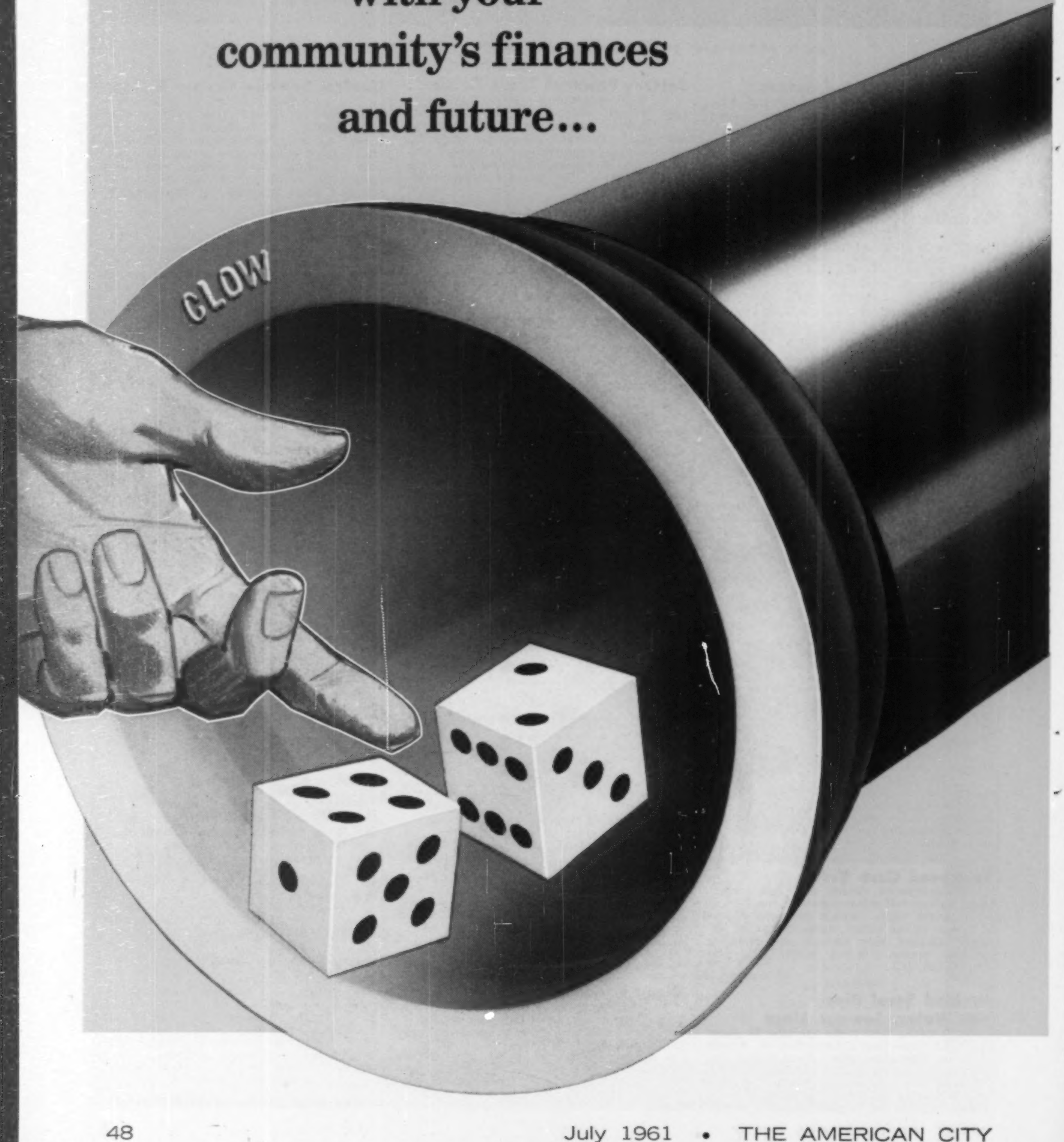
122 Short-distance systems can be either pneumatic, electrical or a combination. In long-distance transmission, electrical system provides selection of either ac or dc circuits. Up to 100 function on a pair of telephone wires. Bulletins available from BAILEY METER CO., 1035 IVANHOE RD., CLEVELAND 10, OHIO.

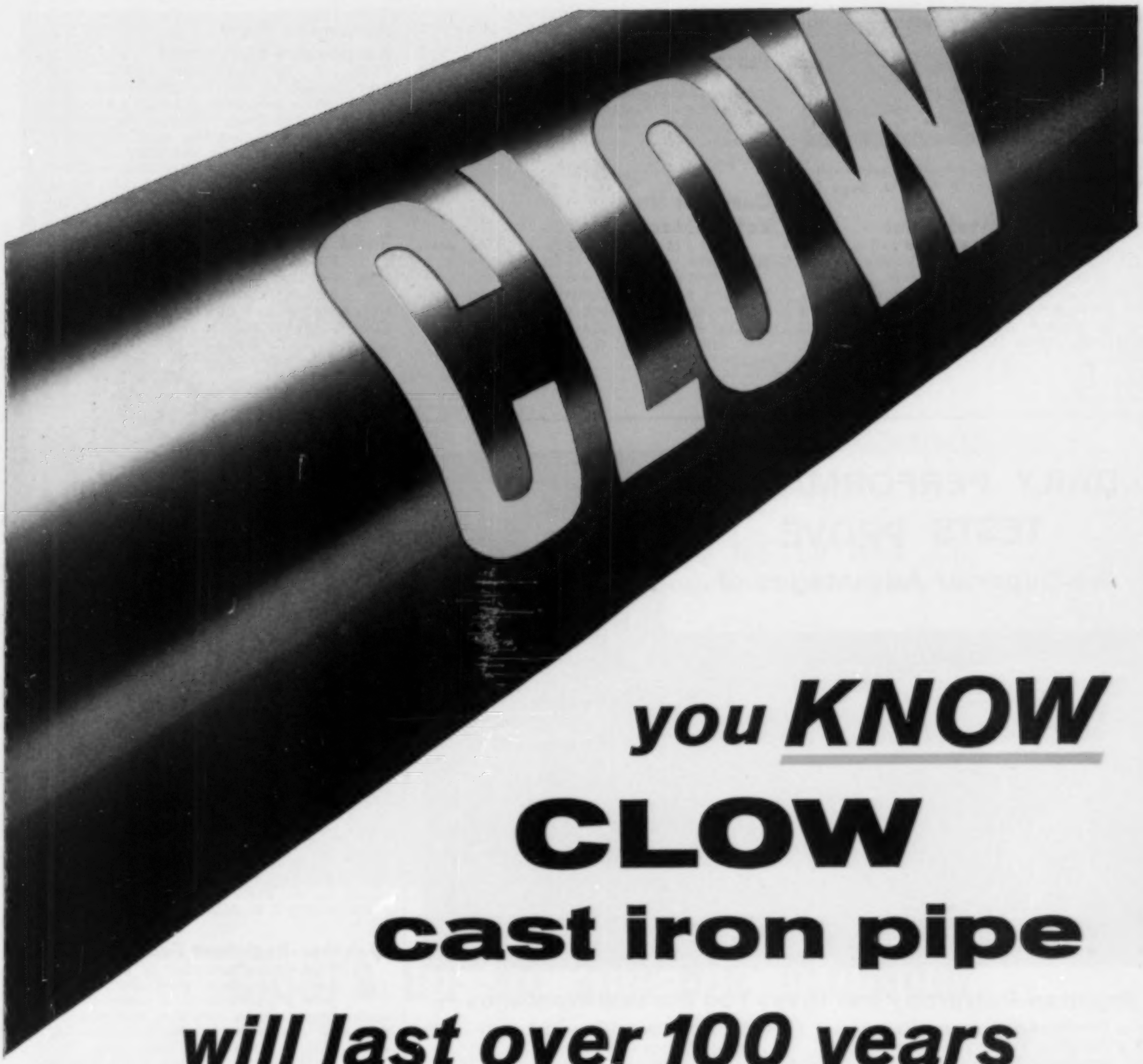
Spraying Equipment for Street Repair

123 These Tarco sprayers permit spraying direct from the shipping drum. Bulletin illustrates their use in cold patching, sub-sealing, and construction work; waterproofing and painting operations; weed and insect spraying. Write TARRANT MFG. CO., 27 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

(See page 50 for more Bulletins)

Don't Gamble... with your community's finances and future...





you KNOW CLOW cast iron pipe will last over 100 years

Can you risk the high cost of buying substitutes "at a price"? CLOW cast iron pipe assures dependable water service... now and for the future. The first cost is the *last* cost. Only tough, rugged cast iron pipe combines proven long life, trouble-free service, and sustained high-carrying capacity at low cost. Can you afford to buy less? Before you buy, let us prove to you that CLOW cast iron pipe is the best value for your job.

CLOW manufactures a complete line of cast iron pipe, fittings, valves, fire hydrants and piping specialties for every waterworks installation. Write or call today.

CLOW CAST IRON PIPE

JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company
Waterford, N.Y.

Iowa Valve Company
Oskaloosa, Iowa

Clow Cast Iron Pipe Plants are located at
BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Sewage Treatment Plant

124 *Bulletin* 1825-D supplies full facts on the Accelator, which combines in a single basin the separate processes of mixing, coagulation, and sludge removal, and saves up to 80% in space. Designed for clarification, softening or for combined treatment. Write INFILCO, INC., TUCSON, ARIZ.

Cut-Back and Emulsion Sprayers

125 By writing to AEROIL PRODUCTS CO., INC., 69 WESLEY ST., S. HACKENSACK, N. J., you can obtain complete details on these one-man operated trailer-mounted pressure sprayers for heated asphalt cut-backs and unheated emulsion, which also handle dust control solutions, etc.

Compact New Voting Machine

126 . . . is smaller, lighter weight, portable, of clean functional design, lower in cost, more flexible, easier to store, has been tested in use and has greater capacity. Both voter and election officials endorse it. For details write SEISCOR MFG. CO., P. O. BOX 1590, TULSA, OKLA.

Automatic Flow Responsive Equipment

127 . . . for liquid feed systems is the subject of *Bulletin* Ref. No. 1400.20-1, which describes, illustrates and gives dimensions of Proportioneers Treet-O-Trol Model 1410-1 successfully used for adding decolorizers and filter aid slurries to municipal water supplies and wastes. Write B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE 1, R. I.

Sand Blasting Equipment

128 Designed for most types of outdoor cleaning work, this sand blast generator removes rust scale, paint, cleans bridges, highway equipment, etc. Equipped with remote control with deadman valve. For bulletin, write RUEMELIN MFG. CO., 3902 PALMER ST., MILWAUKEE 12, WIS.

Trencher Increases Scope

129 Optional drive shaft and boom mounting attachment increases trenching range of the T-66 trencher-backfiller to 16 inches wide, 24 inches deep. It can now dig for footings, irrigation trenches, underground installations of cable mains. Write DAVIS MFG. INC., 1500 S. McLEAN BLVD., WICHITA 13, KANS.

The Way to Get Better Secondary Roads

130 Four steps to better secondary roads are detailed in "A Program for Progressive Improvement of Secondary Roads," available from COLUMBIA CALCIUM CHLORIDE, ONE GATEWAY CENTER, PITTSBURGH 22, PA.

Answer to Laying Pipelines Fast

131 No bolts, no nuts, no wrenches. USIFLEX Boltless Flexible Joint Pipe makes laying of underwater pipe installations more economical. Illustrated booklet explains how and why. Write U. S. PIPE AND FOUNDRY CO., BIRMINGHAM 2, ALA.

Weather-Resistant Fencing

132 This fence material is made from top grade steel wire and is completely galvanized to make it thoroughly resistant to corrosion and weather. For full description, specifications, etc., write THE COLORADO FUEL AND IRON CORP., DENVER, COLO., OAKLAND, CALIF., NEW YORK, N. Y.

Truck News

133 From FORD DIVISION, FORD MOTOR CO., P. O. BOX 658, DEARBORN, MICH., comes news that its big line of trucks has a broader warranty, greater economy and durability. For details and "certified economy book" write the company.

Augur-Type Mountable Spreader

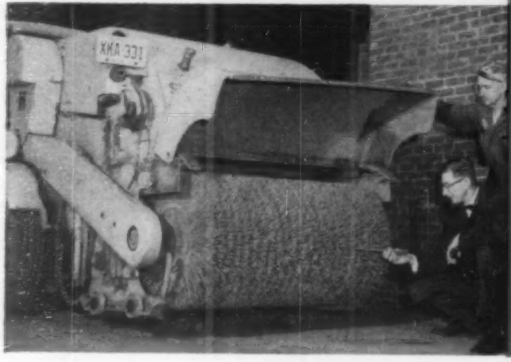
134 *Bulletin* A-464 explains how easy it is to convert a standard dump truck into an effective ice control unit. Also introduces the A1-SC mountable spreader, which distributes ice control materials in 1- to 4-lane widths. Write BAUGHMAN MFG. CO., INC., 307 SHIPMAN RD., JERSEYVILLE, ILL.

Extra Zip for Fire-Fighting Vehicles

135 In fire-fighting time is money; it's often life, too. That's why it's necessary for fire apparatus to roll fast, roll safely, roll with maximum efficiency. Spicer Turbo-Matic Transmissions make it possible for them to do so. Write DANA CORP., TOLEDO 1, OHIO, for full details.

(See page 52 for more Bulletins)

DAILY PERFORMANCE TESTS PROVE the Superior Advantages of . . . Prostran® BRISTLES for Street Sweeper Brooms!



Measuring wear of Prostran bristles is a regular part of the extensive records kept by Whiting Distributors on performance of bristle materials. Tuffibre personnel check a Prostran broom after 600 miles of rugged sweeping. Photo: Hercules Powder Co.

Prostran-Polypropylene Gives You These Advantages—

- Excellent Sweeping Efficiency
- Superior To Any Natural Or Synthetic Broom Material
- Toughness and Superior Abrasive Action
- Heavy Duty Efficiency and Clean Sweeping
- Lightest Weight Of All Synthetics — more bulk per pound
- Minimum "Down-Time" for Repeated Broom Filling
- Reduced Cost per Sweeping Mile
- Excellent Flex-Life for Ideal Bend Recovery
- Longer Lasting Use-Life
- Excellent Resistance to Chemicals, Solvents, Greases, Oils and Many Common Acids
- Top Performance Under All Weather Conditions

DISTRIBUTED IN UNITED STATES BY:

New England States
Atlantic Broom Service, Inc.
60 McDonald Street
Readville 36, Massachusetts

Texas, Louisiana
Dallas Brush Mfg. Co.
5108 N. Westmoreland
Dallas 7, Texas

U. S. A. — except as listed
Tuffibre Co., 17 Kearney St.
East Orange, New Jersey
Branch Warehouses Nationwide

IN CANADA BY:

Eastern Canada
Sicard, Inc.
2055 Bennett Ave.
Montreal, Quebec

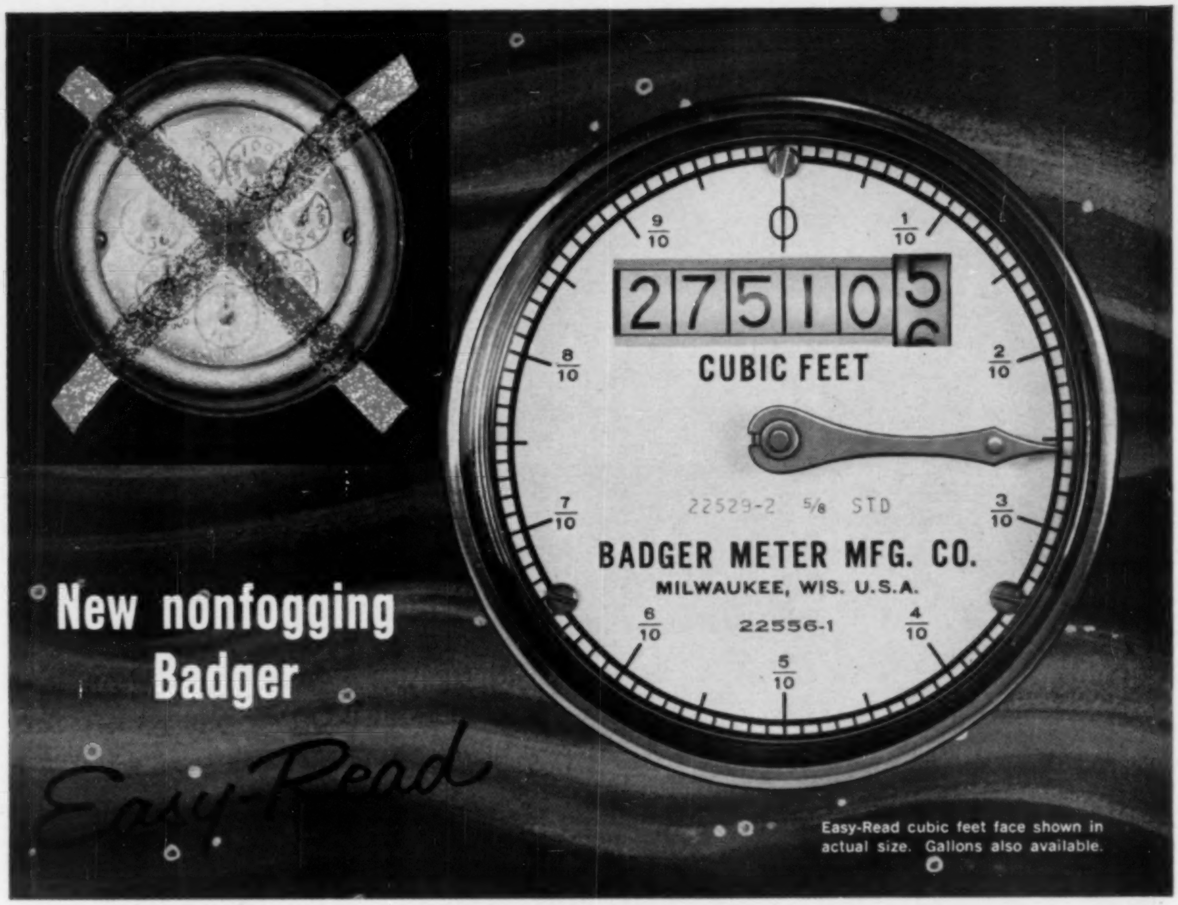
Manitoba, Saskatchewan
Atlas Brush Ltd.
McDermot & Lydia Sts.
Winnipeg 2, Manitoba

Alberta, British Columbia
Brodie Brush Co., Ltd.
891 Cambie St.
Vancouver, British Columbia

PHONE
Burlington, Vt.
UNiversity 4-7414

E.B. & A.C. WHITING COMPANY
Burlington, Vermont

E.B. & A.C. WHITING CO. QUALITY SINCE 1873


New nonfogging
Badger
Easy-Read
9/10
0
1/10
275105
8/10
CUBIC FEET
2/10
22529-2 5/8 STD
7/10
3/10
BADGER METER MFG. CO.
MILWAUKEE, WIS. U.S.A.
6/10
22556-1
4/10
5/10

Easy-Read cubic feet face shown in actual size. Gallons also available.

clears up an age-old problem

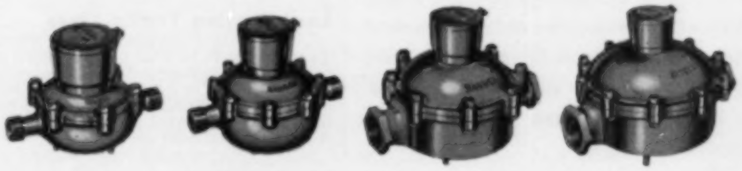
Neither fogging nor clouding can ever prevent the easy reading of the new Badger magnetic drive meter. Easy-Read's register is hermetically sealed against dirt, dust, water and vapor.

Easy-Read has the biggest, most readable face yet to appear on the market. Its permanent digits stand a full ¼" tall. A special heavy tempered glass lens protects Easy-Read's face and preserves the seal. The tempered glass is highly resistant to breakage and scratching.

Badger has added still another unique design feature: the Easy-Read register is removable, even while the meter stays in the line.

Ask your Badger representative for full details and an Easy-Read demonstration.

The new Easy-Read can be ordered in split-case (⅝" thru 2") or frostproof models (⅝" thru 1" x 1¼")



Badger Meter Mfg. Company

4545 West Brown Deer Road • Milwaukee 23, Wisconsin

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

2-Way Radio for the Small Community

136 Police, firemen—here's an inexpensive, sensitive Citizens' Radio (Class D) with built-in squelch, automatic volume control, automatic noise limiter. Twenty-three channel coverage. For details on the "Messenger," write E. F. JOHNSON CO., 2101 TENTH AVE., WASECA, MINN.

Conveyors for Water, Sewage Treatment Plants

137 Tubular Conveyors move filter cake and grit, handle ferric sulfate, lime and alum—will convey almost any wet or dry flowable material through any plane or angle, in a wide variety of circuits, reducing labor, increasing safety, cutting costs. Write HAPMAN CORP., CONVEYOR DIV., 630 GIBSON ST., KALAMAZOO 6, MICH.

New Radar Speed Timer

138 Model 304A times cars from 600 feet right to the check car; trucks and buses up to 1500 feet away. This rugged timing device incorporates all necessary technical features in a reliable radar timing device. Full information available from MUNI-QUIP CORP., 989 W. KING ST., DECATUR, ILL.

New Way to Tap into Sewer Lines

139 This new method for tapping into sewer lines is designed to eliminate infiltration. Four-page bulletin illustrates step-by-step procedure and lists 12 advantages of this improved method. Write SHEWER TAP, INC., 1019 ADMIRAL BLVD., P. O. BOX 1301, KANSAS CITY, MO.

Keeps Streets Clean

140 Flushing streets during hot, dusty summer months keep them both clean and cool. E. D. ENTYRE & CO., OREGON, ILL., has prepared full information on a sanitary street flusher that cleans streets up to 42 feet wide in a single trip—even gets under parked cars.

Repair Clamps and Saddles

141 This full-line catalog will bring you up-to-date on the repair clamps and saddles for steel and cast iron pipe now available from M. B. SKINNER CO., SOUTH BEND, IND. Bell joint, split coupling, emergency pipe and pipe line clamps, as well as drilling equipment, are included.

Clippers, Mowers, Soil Scrapers

142 Current catalogs from SERVIS EQUIPMENT CO., 1021 SINGLETON BLVD., DALLAS 21, TEX., gives specifications and application data for the E-60 Clipper, which cuts 1½-inch brush, 6-inch swath; BM-60 mower, which cuts 30 acres in an 8-hour day; and a soil scraper that scarifies and scrapes at the same time, and levels, grades and backfills.

Accurate Measuring Wheels

143 Engineers, surveyors, police, construction men—there's model variety in the Rolatape measuring wheel line, and at least one to suit your specific needs. For full line catalog, write ROLATAPE, INC., 1741 14TH ST., SANTA MONICA 2, CALIF.

New ¾ Yard Excavator

144 HARNISCHFEGER CORP., 4445 W. NATIONAL AVE., MILWAUKEE 46, WIS., has developed the P&H Model 315 crawler excavator for service as crane, dragline, clamshell, back-hoe or shovel. Among its special standard features is independent propel, which helps speed work.

Rubber Gaskets for Water Pipe

145 Tylox rubber gaskets are designed to reduce pipe-laying costs; make water-tight joints; whip acid attack. Engineering data and illustrated case histories available from HAMILTON KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO.

Coin-Handling Equipment

146 This complement of equipment drastically reduces the time it takes to sort, count, package or bag coins. Catalog literature on full line is available from BRANDT AUTOMATIC CASHIER CO., WATERTOWN, WIS.

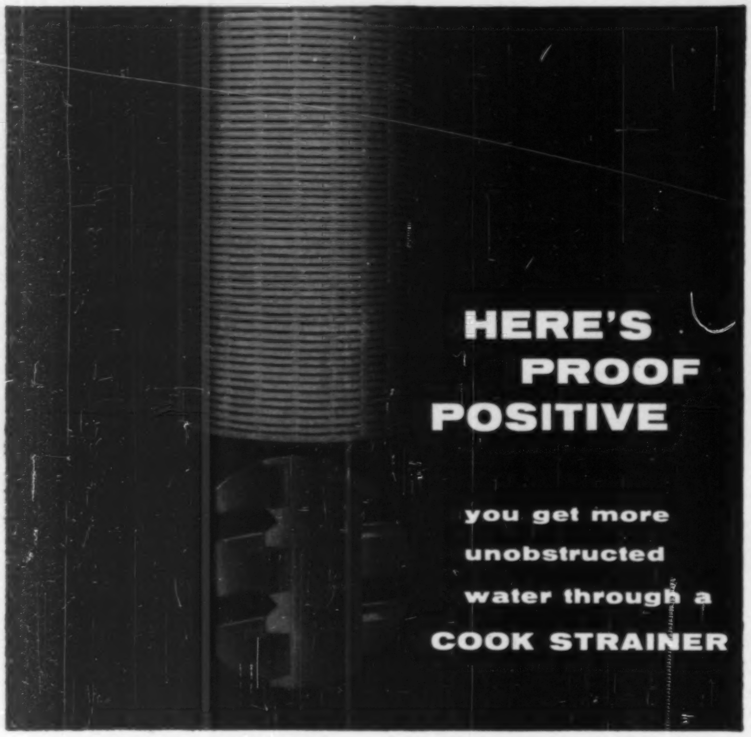
Long-Lasting Traffic Lines

147 This thermoplastic traffic marking material is said to stay white and bright throughout the seasons and last 8 to 10 times longer than other marking materials. PERMA-LINE, 100 W. MONROE ST., CHICAGO, ILL. will provide detailed information on request.

4-Wheel Drive Loaders

148 A new 16-page catalog, designed for easy use and application reference, lists specifications on each of the three 4-wheel drive loader models manufactured by J. I. CASE CO., RACINE, WIS.

(See page 54 for more Bulletins)



Cook's exclusive V-shaped slot construction permits the most direct water way from the water bearing strata to the well. This time-tested and proven design allows for maximum development of your well by removing silt, alluvium, clay, and fine sand from around the outside of the strainer, thus providing a natural filter of coarser and uniform sand and gravel.

Why not investigate all the advantages of Cook Strainers? They are available in Red Brass, Silicon Bronze, Armco Iron, or Stainless Steel; in as many different slot sizes as required. Eight to twenty-four hours delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway Avenue • Cincinnati 11, Ohio
WORLD'S LEADING NAME IN WELL STRAINERS

"SAFETY SALTING" FOR YOUR
MOTORING SAFETY AND CONVENIENCE

NOW! An ice control program that cuts accidents and complaints!

The Morton Safe-T-Salt* Ice Control Program can help you accomplish two important jobs this winter . . . public safety and public relations!

Streets are safer when they are salted with Safe-T-Salt, because it is a screened and graded rock salt that gets rid of dangerous ice and snow in the quickest, safest, most economical way possible.

The name "Safe-T-Salt" was developed to explain this job to the public. As you know, too many uninformed citizens complain about de-icing programs every winter. The "Safe-T-Salt" name will cut down those complaints by emphasizing the safety value of salting treacherous pavements . . . will keep the public aware of your efforts to reduce winter driving hazards.

The truck banner in the illustration above represents one way that safety salting can be made popular. These banners are available free to Morton Salt customers. Your Morton representative can supply them and other material . . . as well as furnishing you with helpful publicity features for your local newspapers, explaining the value of de-icing programs. He'll be glad to help you start planning *now* for a safer and happier winter.

FOR MORE INFORMATION ON MORTON SAFE-T-SALT, MAIL THIS COUPON TODAY

Please have a Morton Salt representative call me for an appointment to explain all the advantages of your Safe-T-Salt program.

Name____________________________________

Title____________________________________

Address__________________________________

City__________________Zone______State______

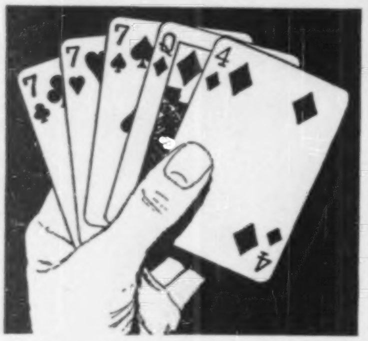
MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. AC7, 110 N. Wacker Drive, Chicago 6, Ill.

**Safe-T-Salt is a trademark of the Morton Salt Company*

POKER? Play to win!



How would you play this hand?

Raise? If your 3-of-kind are nines or lower, yes. Four times in five your hand will be high before the draw, but protect it. If the 3-of-kind are tens or better, don't raise until after the draw. You want customers.

Here's a sure winner from FORD:

Sherman C-8 Bobcat power digger —master of the bell hole.

From one quick-set tractor position, the Bobcat digs clean, straight-sided bell holes faster and cheaper than any other unit on the market. Close-coupled to tractor, excellent for work in close quarters.

The Bobcat's a master of the small hole, too. Digs 5 feet deep with a surface opening as small as 48" in length. Get all the details from your Ford Tractor Dealer, or write:

Tractor and Implement Division
Ford Motor Company
Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

Your City Can Improve Services and Reduce Costs

. . . by taking advantage of the improved municipal equipment offered below.

Write to address given or circle corresponding number on free post card on page 55.

Collects Leaves

149 GOOD ROADS MACHINERY CORP., MINERVA, OHIO, has prepared a bulletin on its Leaf Collector, which sweeps to 8 feet, holds 14 cubic yards, and turns this phase of street sanitation into a 2-man operation.

Improved 2-Way Radio System

150 CHECKER ELECTRONICS CORP., P. O. BOX 251, GRAYSLAKE, ILL., has added a 2-way VHF FM mobile radio system to its Ringmaster line. It incorporates features that give it greater range, transistorized power supply, low battery drain. Two models available—high and low band.

Three New Backhoes

151 These new attachments, with full 180° swing and 3-position dig-all buckets, fit all popular makes of utility tractors, new and used. They include the 10-foot Model 1000, 12-foot Model 1200 and 13-foot Model 1300. For specifications, write PARSONS CO., SHAWNEE DEPT., NEWTON, IA.

New Fire Tanker

152 *Bulletin* A-462 introduces a new and improved version of the Fire Tanker fire-fighting truck, made by BAUGHMAN MFG. CO., JERSEYVILLE, ILL. Tanker carries its own water supply in a 1500-gallon capacity tank and can be pumped while the vehicle is in motion.

Put This Submersible Through a 6-inch Opening

153 New 1½-inch electric submersible of 90 gpm capacity at 10-foot head, has maximum diameter of 5⅞ inches, enabling it to slip into small openings or pipes. Two models available; both always primed and require no suction hose. Write SPEED KING MANUFACTURING CO. DIVISION, COLUMBUS 16, OHIO.

Improved Crane-Excavator

154 Twenty-nine major improvements to increase production and reduce operating costs have been announced for the 15-B Series Two crane-excavator, available as crawler or carrier-mounted unit, fully convertible for crane, dragline, clamshell, hoe or shovel service. Write SALES PROMOTION DIV., BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS.

Renews Concrete

155 There's a durable, economical way to renew concrete structures, such as reservoirs, filter plants, sea walls, pipelines, sewers, bridges. Why not let INDIANA GUNITE & CONSTRUCTION CO., INC., 1555 HELTON ST., FLORENCE, ALA., tell you about it?

Flushes Streets Clean

156 Cities small and large will want to get the latest brochure on this street flusher line, which uses high-pressure water streams to flush any paved surface really clean. Write ROSCO MFG. CO., 3118 SNELLING AVE., MINNEAPOLIS 6, MINN.

Deadly to Insect Pests

157 This all-enveloping insecticidal applicator fogs or mists insects to death, gives complete space control at low operating and maintenance costs. For illustrated TIFA brochure, write TODD SHIPYARDS CORP., PRODUCTS DIV., COLUMBIA AND HALLECK STS., BROOKLYN 31, N. Y.

Swimming Pool Design Manual

158 This 112-page *Design Manual* has just been issued by PADDOCK OF CALIFORNIA, 8400 SANTA MONICA BLVD., LOS ANGELES 46, CALIF. Available to architects, engineers, and municipal officials, it includes 44 pages of equipment specification sheets and engineering data relating to sizing and recirculating piping.

Improved Lettering System

159 This time- and labor-saving engineered lettering system utilizing precut pressure-sensitive plastic film letters and numbers is now available in 1-, 2-, 3- and 4-inch sizes and in 10 colors. Manufactured by THE DEMP-NOCK CO., WARREN, MICH., the "LET-R-SET" Kit is ideal for plant maintenance departments, marinas, sign shops, etc.

Trenching Equipment

160 Descriptive brochure supplies specifications and other pertinent data on the new, self-propelled "Compact" with hydraulically controlled transport gear. It's designed to produce small trenches at very low cost per foot. Write AUBURN MACHINE WORKS, INC., AUBURN, NEBR.

Carryable Pumps, Generators

161 HOMELITE, 70 RIVERDALE AVE., PORT CHESTER, N. Y., announces a new line of economy-priced, 4-cycle engine-driven pumps and generators. The self-priming pumps are 1½", 2", and 3" centrifugal and 3" diaphragm models. The generators come in 1500-, 3000-, and 5000-watt sizes.

Alleviates Manhole Cover Problems

162 New steel and rubber manhole riser cushion stops wear and noise, eliminates grinding and temporary flange repairs, absorbs and dissipates shock, available in basic standard manhole sizes. Write UTILITIES SUPPLY DIVISION, CENTRAL STATES INDUSTRIAL SUPPLY CO., 535 TERMINAL TOWER, CLEVELAND 13, OHIO.

Transistor-Powered Megaphone

163 This portable unit, Model S-168, amplifies speech 2000 times, will make your voice heard ½ mile away. Ideal for police, firemen, for parks and recreation, municipal waterfront and marina areas. For brochure giving specifications, write AUDIO EQUIPMENT CO. INC., PORT WASHINGTON, N. Y.

"Operation Streetsweep" on Film

164 Municipal street sanitation officials who want to arrange for a showing of this 16-mm sound film which pictures DuPont's sweeping efficiency tests that have led to development of broom-filling materials such as new "Herox" I-beam, should write to R. S. WIGGINS, POLYCHEMICALS DEPT., DUPONT BLDG., WILMINGTON 98, DEL.

Push-Botton Compaction Testing

165 New nuclear device, the Hydro-Densimeter, makes rapid determination of density and moisture content of compacted soils, aggregates and pavements. A reading takes only 60 seconds. Write VIATEC DIVISION OF TELLUROMETER, INC., 206 DUPONT CIRCLE BLDG., WASHINGTON 6, D. C.

(See page 58 for more Bulletins)

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

Postage
Will be Paid
by
Addressee

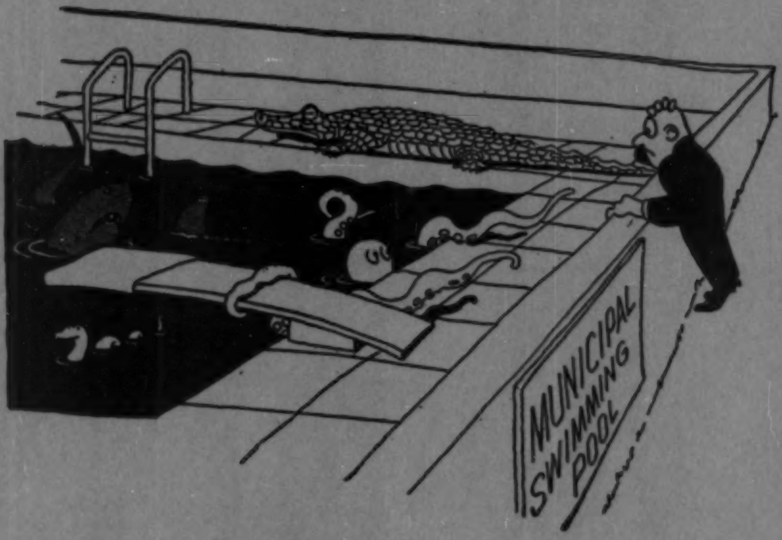
No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.



THERE'S AN ANSWER TO ALMOST EVERY PROBLEM!

(See other side)

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 47:

100 101 102 103 104 105 106 107 108 109 110 111
112 113 114 115 116 117 118 119 120 121 122 123
124 125 126 127 128 129 130 131 132 133 134 135
136 137 138 139 140 141 142 143 144 145 146 147
148 149 150 151 152 153 154 155 156 157 158 159
160 161 162 163 164 165 166 167 168 169 170 171
172 173 174 175 176 177 178 179 180 181 182 183
184 185 186 187 188 189 190 191 192 193 194 195
196 197 198 199 200 201 202 203 204 205 206 207
208 209 210 211 212 213 214 215 216 217 218 219
220 221 222 223 224 225 226 227 228 229 230 231
232 233 234 235 236 237 238 239 240 241 242 243
244 245 246 247 248 249 250

I would also like to receive manufacturers' booklets on..............................
....
....
....

Name: (Please Print)..
Title:...
Address..
.... 7-61

A Listing of Your Business Connection Is Important

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 47:

100	112	124	136	148	160	172	184	196	208	220	232	244
101	113	125	137	149	161	173	185	197	209	221	233	245
102	114	126	138	150	162	174	186	198	210	222	234	246
103	115	127	139	151	163	175	187	199	211	223	235	247
104	116	128	140	152	164	176	188	200	212	224	236	248
105	117	129	141	153	165	177	189	201	213	225	237	249
106	118	130	142	154	166	178	190	202	214	226	238	250
107	119	131	143	155	167	179	191	203	215	227	239	
108	120	132	144	156	168	180	192	204	216	228	240	
109	121	133	145	157	169	181	193	205	217	229	241	
110	122	134	146	158	170	182	194	206	218	230	242	
111	123	135	147	159	171	183	195	207	219	231	243	

I would also like to receive manufacturers' booklets on ....

....

....

....

Name: (Please Print) ....

Title: ....

Address ....

.... 7-61

A Listing of Your Business Connection Is Important

MUNICIPAL
MMING
AQUARIUM

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

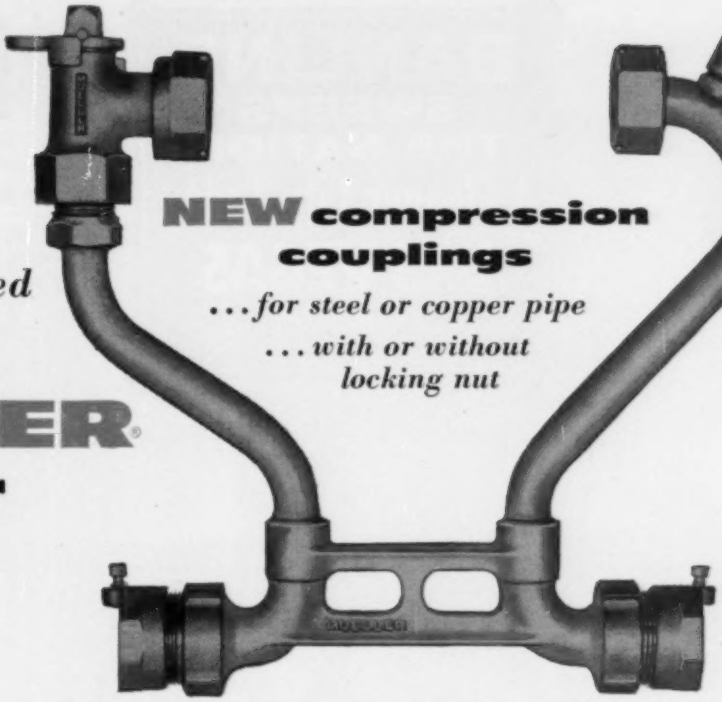
THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

quickly installed in old piping!

MUELLER® copper meter yokes



NEW compression couplings

...for steel or copper pipe
...with or without locking nut

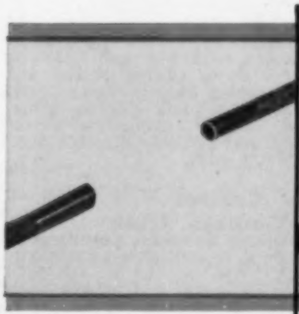
You can now install Mueller Copper Meter Yokes in any existing steel or copper piping in just a few minutes — and without cutting threads or sweating joints.

The simple step-by-step procedure for installing a yoke with Mueller's new Compression Couplings is shown below. Permanent, water-tight joints are quickly made even on rough and badly pitted pipe. Possible trouble is avoided because the piping does not have to be moved.

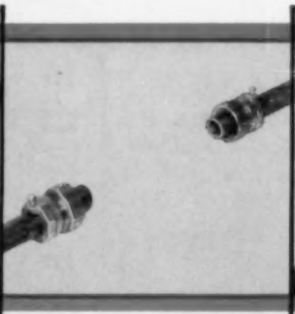
These new, time-saving couplings are now available for all Mueller Copper Meter Yokes with Multi-Purpose Ends. Regular compression nut or locking nut designs can be furnished for steel or copper pipe.

The locking nut type (shown) positively prevents any movement of the yoke on the pipe and insures continuous electrical bonding of the service piping.

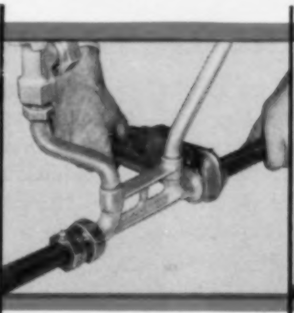
Write for complete information and specifications on Mueller's Copper Meter Yokes.



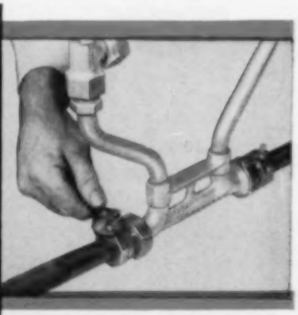
1 Clean dirt, rust and scale from pipe and cut out a section just slightly longer than yoke (without coupling).



2 Remove all burrs from inside and outside of pipe and slip complete coupling over cleaned ends of pipe.



3 Align yoke between ends of pipe, slide couplings into place and tighten couplings securely onto yoke body.

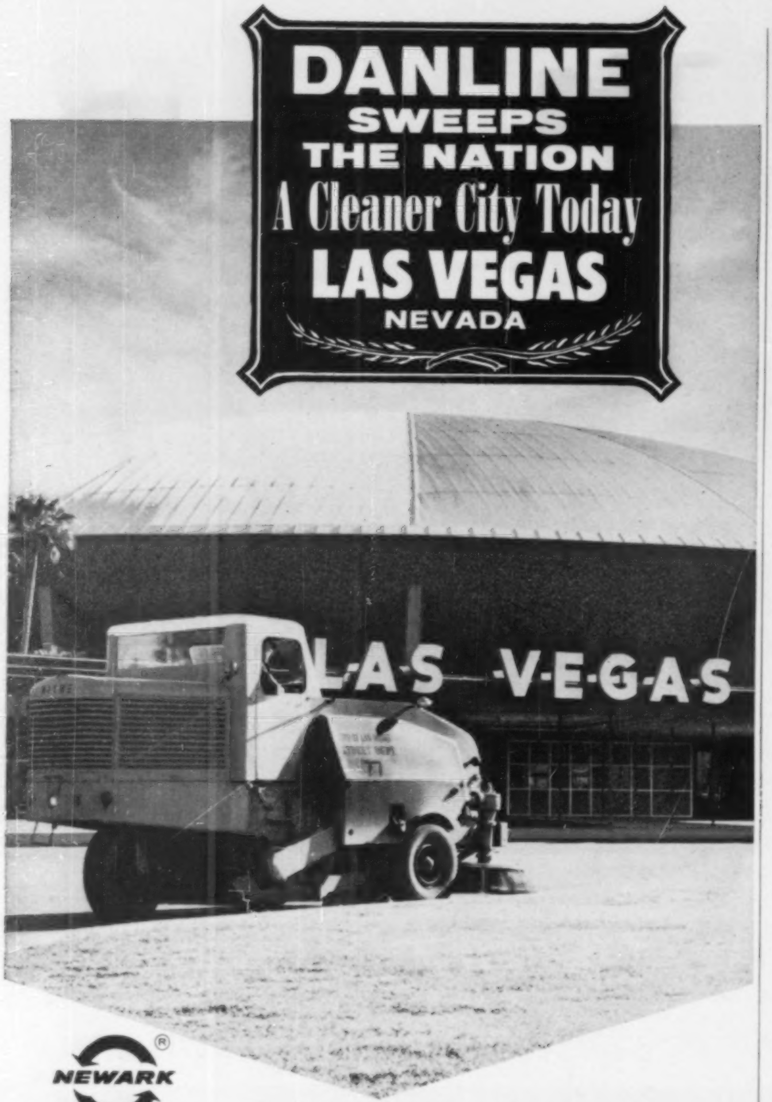


4 Tighten compression nuts on pipe and lock yoke in place by tightening locking set screw on clamp. Setting complete.

Copper Meter Yokes are just a portion of Mueller's complete line of quality-matched meter setting equipment.

MUELLER CO. since 1857 QUALITY SERVING the Water and Gas Industries

MUELLER CO.
DECATUR, ILL.
Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario.



DANLINE SWEEPS THE NATION
A Cleaner City Today
LAS VEGAS
NEVADA

NEWARK®

Ah, Las Vegas, noted for fun 24 hours a day, and the wise men who run the city. Kelton E. Bainum, Supt. of Streets and Garage had this to say, "Our first Danline was a "tongue-in-cheek" experiment. So many plastic and synthetic materials had fallen short of expectations. The initial test with the Danline indicated we could realize a 30% reduction in broom costs at the very least. In fact, it is more nearly 50%, and this with much cleaner streets. 2300 to 2500 sweeping miles is common with an occasional 3000 mile life between changes. These mileages result in a 7½¢ to 9¢ broom cost per mile." Your city can also benefit from Danline. We invite your inquiry.

59-52

Leadership Proved Through Performance!

NEWARK BRUSH COMPANY
260 MICHIGAN AVE., KENILWORTH, N. J.

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Filter Underdrains

166 The several types of filter underdrains described in literature from GENERAL FILTER CO., BOX 350, 925 2ND ST., AMES, IA., include the Multicrete, for easy installation in concrete gravity filters; the Multiplate, for steel gravity and pressure filters; and header and ladder-type.

New Relays for Controlling Outdoor Lighting

167 These two improved relays—single pole (Type MR-XD) and two-pole (Type MR-OG)—are the latest offered for switching multiple lighting circuits by SOUTH BEND CURRENT CONTROLLER CO., INC., 1237 NORTH SIDE BLVD., SOUTH BEND 15, IND. Write for explanatory cards.

Sewage Lift Stations

168 The several bulletins within this spiral-bound catalog give full facts, engineering data, and installation details on factory-built sewage pumping stations, vertical close-coupled non-clog sewage pumps, pneumatic ejector sewage lift stations, and increasing-type check valves. Write SMITH & LOVELESS INC., P. O. BOX 8884, KANSAS CITY 15, KANS.

Motor Graders

169 Among the outstanding features of this line of motor graders is its hydraulic control system, which contributes to ease of operation and enables finer control of both heavy and the finest finish grading. Bulletin provides full facts; write HUBER-WARCO CO., MARION, OHIO.

Insects Beware!

170 Even those insects resistant to DDT and other chlorinated insecticides are instantly destroyed by Eldrin, a water-emulsifiable insecticide that has long-lasting residual effect. For descriptive literature, write NATIONAL CHEMSEARCH CORP., 2417 COMMERCE, DALLAS, TEXAS.

Compression-Type Fire Hydrants

171 Standard, traffic and flush models—they're all in 12-page *Circular* 22, which gives features, design and construction, friction loss, suggestions for installation, use, care, setting dimensions, etc. Write M & H VALVE AND FITTINGS CO., ANNISTON, ALA.

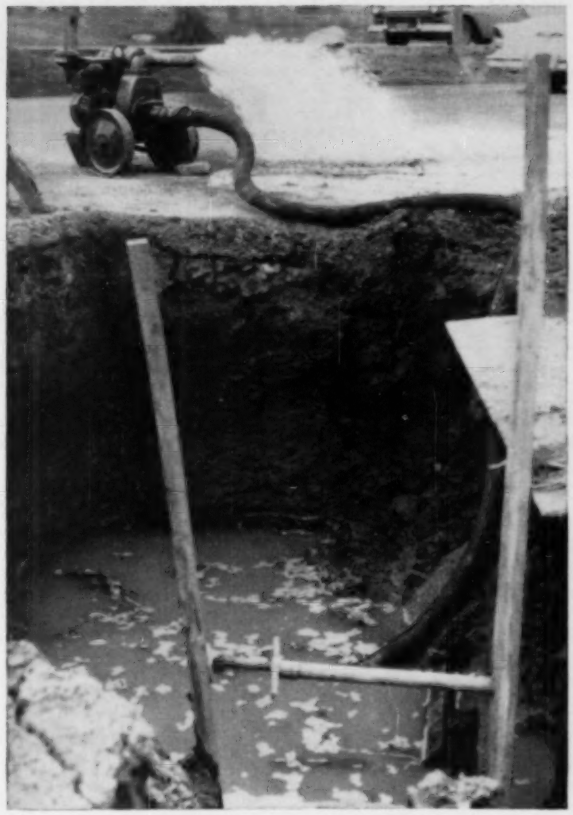
Collects, Crushes Refuse, Garbage, Trash

172 By writing to TRUCK EQUIPMENT CORP., P. O. BOX 3038, RICHMOND 35, VA., you can find out just how clean, fast, economical and efficient garbage-trash-refuse collection can be with a fully hydraulic Truxmore Pakker and container loader on the job.

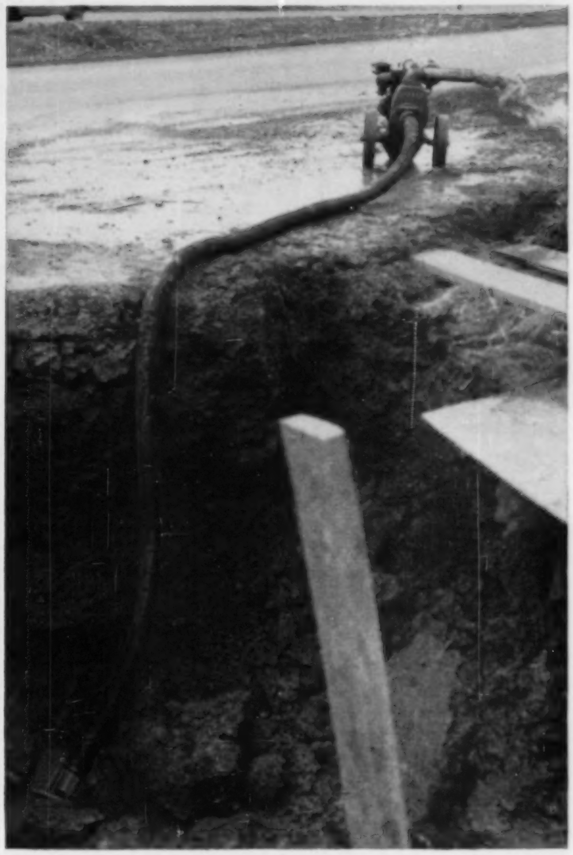
Telemetering for Water Works

173 Four-page bulletin introduces the expanded supervisory and control products and systems available to the water works field from HAMMARLUND AUTOMATION, a Division of TELECHROME MFG. CORP., AMITYVILLE, N. Y. They include telemetering, remote control, mechanized process controls, components for automation and custom automation systems.

(See page 60 for more Bulletins)



BEFORE: Jaeger 3" Trash Pump removing very dirty water. Note discharge stream. 3" model pumps 20,000 gph, 4" model pumps 46,000 gph @ 10' suction lift. Give you big capacity *plus* ability to handle trash.

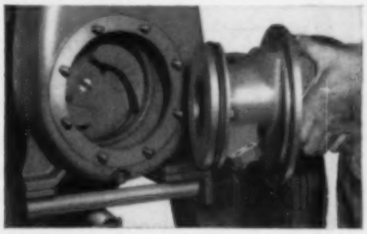


AFTER: Pump on repriming cycle handling seepage. Unclogged strainer continues to function perfectly on mud bottom.

New Jaeger "PosiJector" Trash Pumps lick dewatering problems

- First self-priming centrifugals that *pass and positively eject trash.*
- *No more clogged strainers.* Now you can use Jaeger's *big-opening* strainer that passes leaves and sticks.
- *Safely pump trashy water* with Jaeger heavy 2-bladed impeller that passes up to 2" diameter solids.
- *Positively discharge the trash* with revolutionary Jaeger "PosiJector." It prevents recirculation of solids *and channels them into the discharge flow from the pump.* No other trash pump has this essential feature.
- *Entire suction chamber quickly removable* for periodic cleaning and inspection or adjustment of liner plate and impeller. Another Jaeger exclusive.
- *Ideal for all dewatering work*: With their 20,000 and 46,000 gph capacities Jaeger 3" and 4" trash pumps are *efficient* for any job and *essential* on dirty jobs. Call your Jaeger distributor or send for new Catalog PT-1.

"PosiJector" prevents recirculation of solids that wear and clog other pumps. (Pat. Pending)



Quick, easy access to pump, liner plate and impeller. Entire suction chamber removable.

THE JAEGER MACHINE COMPANY, 505 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

World wide sales and service through Jaeger International Corp., Apartado 137, Panama, R. P.

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Sort Coins 20 Times Faster

174 It's fast, accurate and portable—and it sorts up to $50 in mixed coins in only 20 seconds. For descriptive catalog on the Kwik-Sort Color-Keyed Coin Sorter, counting and packaging system, write BLOCK AND CO., INC., 350 W. ONTARIO ST., CHICAGO 10, ILL.

Premade Gutter Brooms

175 Fact-filled, illustrated brochure tells how Danline premade gutter brooms enable you to strip and refill worn brush sections in just 10 minutes. For copy, write NEWARK BRUSH CO., 263 MICHIGAN AVE., KENILWORTH, N. J.

Engine Cooling, Heat Recovery Systems

176 Sixteen-page folder on Vapor Phase systems and products, with primary emphasis on internal combustion engine exhaust heat recovery silencers. Includes usefulness, economy, municipal applications at sewage treatment plants. Write ENGINEERING CONTROLS, INC., 611 E. MARCEAU ST., ST. LOUIS 11, MO.

Mows More Lawn Area Faster

177 The 15-foot Flexible Terrain King cuts costs as it cuts grass, weeds, brush and stalks. It exhibits its versatility whether mowing park grounds or at work on right-of ways. Several models available. Write SMC MOWAL Division of ENGLER MANUFACTURING CORP., 4408 CENTER, HOUSTON, TEXAS.

Concret Joint Filler

178 Flexcell is a resilient, non-extruding expansion joint filler that assures against concrete failure due to expansion-contraction. Performance advantages and complete literature available from THE CELOTEX CORP., 120 S. LA SALLE, CHICAGO 3, ILL.

Protects Tractor Instruments

179 A molded fiberglass instrument panel cover for Caterpillar D8H and D9G Tractors has been announced by CATERPILLAR TRACTOR CO., PEORIA, ILL. It protects machines against vandalism while they're parked or unattended. During tractor operation, cover is stored on the right hand side of operator's seat.

Accurate Water Meter

180 When you specify Rockwell Sealed Register water meters you know that you need to carry only two parts in your inventory, and that measurement of water use will be precise. *Bulletin* W-811 gives full facts; write ROCKWELL MFG. CO., DEPT. 159-G, PITTSBURGH 8, PA.

Highway Expansion Joints

181 Advantages, uses, product dimensions and specifications for Elastite asphalt and Elastite fiber joints for protection of concrete and masonry are given in current literature offered by THE PHILIP CAREY MFG. CO., CINCINNATI 15, OHIO.

Getting the Paving Material You Specify?

182 Testing with a Bico-Braun-Dulin Rotarex separator will help you determine bitumen content, character and gradation of aggregates in bitulithic paving materials. For catalog, write BICO, INC., 3116 VALHALLA DRIVE, BURBANK, CALIF. Ask about other control and/or testing instruments.

Rugged, Accurate Level

183 *Booklet* N-3 reports on a precise leveling instrument, indispensable for structural settlement and load studies, jig and fixture alignment, for setting turbines, generators and other heavy machinery, etc. For copy, write WILD HEERBRUGG INSTRUMENTS, INC., PORT WASHINGTON, N. Y.

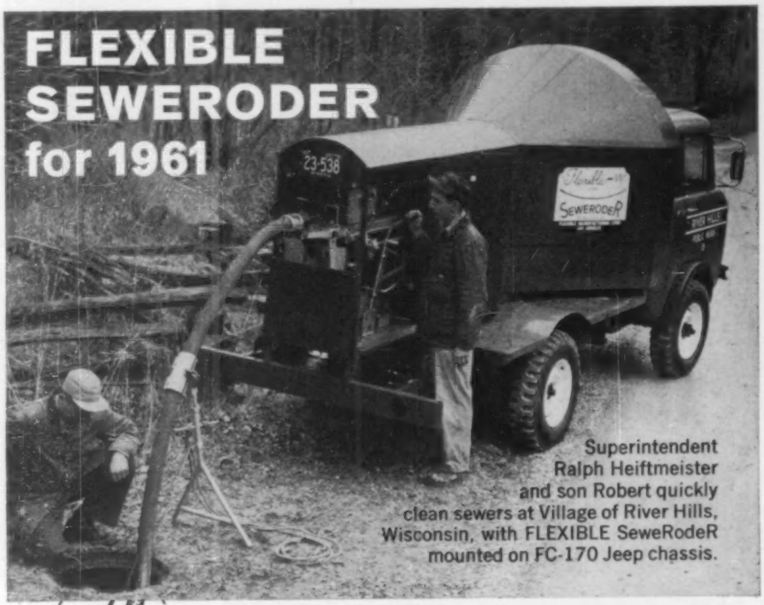
Multiduty EDP System for Municipalities

184 National 390, a compact, electronic data processing system can be leased on a monthly basis or purchased outright, operates as electronic statistician, accountant, mathematician, filing system, reporter. Provides 4 flexible methods of input and output. Write NATIONAL CASH REGISTER CO., DAYTON 9, OHIO.

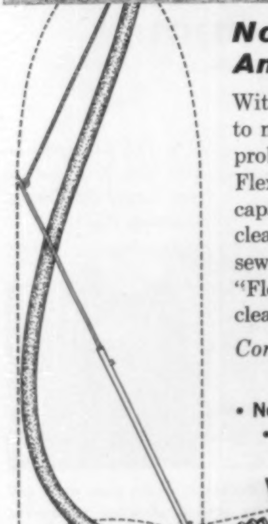
Concrete in Water and Sewage Works

185 . . . is subjected to severe conditions of exposure. Twenty-page *Publication* MBR-P-5 shows how Pozzolith improves concrete quality by enabling better control of unit water content, entrained air, placing consistency, rate of hardening. Studies of 35 installations included. Write MASTER BUILDERS CO., CLEVELAND 18, OHIO.

(See page 63 for more Bulletins)



Superintendent Ralph Heiftmeister and son Robert quickly clean sewers at Village of River Hills, Wisconsin, with FLEXIBLE SeweRodeR mounted on FC-170 Jeep chassis.



Now This Village Can Whip Any Sewer Emergency—FAST!

With a population of 1257 and 20 miles of sewer to maintain, the Village of River Hills solved its problems with existing manpower. They chose the Flexible '61 SeweRodeR and have tripled cleaning capacity for preventive maintenance: the crew can clear a stoppage anywhere along the entire 20-mile sewer system in 30 minutes. Village, town or city—"Flexible" has the equipment to solve any sewer cleaning problem FAST and economically.

Contact your Flexible Sales Engineer today.

1961 FEATURES:

- Now more positive rod drive for smoother operation
- Economical 48" rods
- 900 ft. reel capacity
- 4 to 4,000 lbs. controllable push-pull power
- Instantly reversible.

FLEXIBLE, Inc.

415 SOUTH ZANGS BLVD., DALLAS, TEXAS
3786 DURANGO AVE., LOS ANGELES 34, CALIF. • 1005 SPENCERVILLE ROAD, LIMA, OHIO

William H. Johnson

Imitated
but never equalled

You need only 2 parts!

With Rockwell Sealed Register* meters you need to carry only two parts in your inventory as compared to the large number needed to repair conventional meters. Let our representative prove this to you or write for bulletin W-811. Rockwell Manufacturing Company, Department 159G, Pittsburgh 8, Pennsylvania.

In Canada, Rockwell Manufacturing Company of Canada, Ltd., Box 420, Guelph, Ontario.

*Trademark

SEALED REGISTER* METERS
another fine product by
ROCKWELL

USS

K

AMERICAN TELEPHONE & TELEGRAPH CO.
BELL SYSTEM
AND ASSOCIATED COMPANIES

known by the companies it keeps moving

SHELL

UNITED

Thousands of leading American companies keep their investment at a minimum with a 'Jeep' fleet. Great versatility and low initial cost give you the most versatile vehicle you can possibly get for your money! Traditionally rugged 'Jeep' construction keeps maintenance costs low and the resale value high. Get in touch with us today for complete information! **Write to: Robert J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.**

'Jeep'
VEHICLES ®

'JEEP' FLEETS—FROM THE WORLD'S LARGEST LINE OF 4-WHEEL DRIVE VEHICLES

Willys Motors, Inc., Toledo 1, Ohio. One of the growing Kaiser Industries.

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Tackles Tough Mowing Jobs

186 Nine models form this comprehensive line of rotary mowers which have built-in power and endurance to cut long, heavy grasses, operate on steep slopes or terraced ground. For full-line catalog, write DEVERE CO., RACINE, WIS.

Masonry Saws and Accessories

187 *Catalog* EB-112 features a complete line of masonry and concrete cutting equipment and an up-to-date Eveready blade recommendation chart and blade comparison chart. For copy, write EVEREADY BRIKSAW CO., 1104 UNION AVE., DEPT. 502, KANSAS CITY 1, MO.

Chippers, Choppers, Shredders

188 MITTS & MERRILL, 1022 S. WATER ST., SAGINAW, MICH., announces updated literature on its Beaver brush chipper, which accepts brush up to 6 inches in diameter; its Hog garbage chopping machines, and its line of Air-Fluff paper shredders.

Aluminum Chain Link Fencing

189 Current catalog from NICHOLS WIRE & ALUMINUM CO., DAVENPORT, IA., gives complete specifications for this company's aluminum chain link fencing, fence ties, utility wire and barbed wire, and introduces the new 1½-inch mesh residential aluminum chain link fencing.

Interchangeable Process Pumps

190 An 8-page bulletin describes a completely new line of process pumps, shows how 72 basic combinations allow a choice of features for the service required. *Bulletin* 1-210 is available from BYRON JACKSON PUMPS, INC., P. O. BOX 2017-A, TERMINAL ANNEX, LOS ANGELES 54, CALIF.

Industrial Odor Control

191 Odor control through the use of Alamask is explained in this 15-page booklet from RHODIA INC., 60 E. 56TH ST., NEW YORK 22, N. Y. Methods of odor abatement, application information, case histories included.

Pre-Engineered Metal Buildings

192 *Brochure* No. BD-2602, just released by the BUILDING DIV., THE PARKERSBURG RIG AND REEL CO., PARKERSBURG, W. VA., describes the company's SF Series of pre-engineered rigid-frame buildings for municipal applications, available in clear-span widths from 32 to 120 feet and in unlimited lengths.

Portable Brush Chipper

193 *Bulletin* No. C-3 explains how this machine speeds handling, reduces the cost of brush disposal and cuts handling and hauling time in half. Specifications and operating procedure are included. Write GRUENDLER CRUSHER & PULVERIZER CO., 2915 N. MARKET ST., ST. LOUIS, MO.

Street Lighting Brackets and Mast Arms

194 A complete line of brackets and mast arms for wood, steel, aluminum pole and wall mounting are pictured, described (with full engineering data) in the new catalog issued by KERRIGAN IRON WORKS CO., DEPT. A-7, NASHVILLE, TENN.

Life-saving Equipment

195 Bulletins from OHIO CHEMICAL & SURGICAL EQUIPMENT CO., a Division of AIR REDUCTION CO., INC., 1400 E. WASHINGTON AVE., MADISON 10, WIS., gives specifications, applications and operating procedure for a full line of resuscitators, aspirators and inhalators for municipal emergency services.

Want to Cut Sewer Line Costs?

196 NATIONAL CLAY PIPE MANUFACTURERS, INC., 914 20TH ST., WASHINGTON, D. C., can tell you about new developments that make installation of vitrified clay pipe more efficient and effective—and about a new factory-made compression joint for clay pipe that cuts costs.

Drott's New 4-in-1

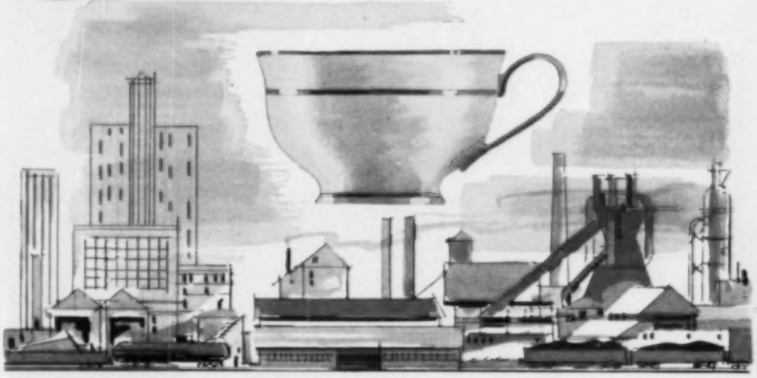
197 DROTT MFG. CORP., MILWAUKEE 15, WIS., reports that its new TD-15 clam-action 4-in-1 sets a fast work pace, with single-stick shift, full reverse-transmission, and plenty of hydraulic control power. Does dozens of jobs; is virtually an unlimited-duty bucket.

Powerful Wheel Loader

198 JOHN DEERE, 3300 RIVER DRIVE, MOLINE, ILL., has prepared a descriptive bulletin giving full information on its efficient, clean-working 3100 Wheel Loader and power-matched backhoes, which provide the operator with the power and controls to boost job productivity.

(See page 64 for more Bulletins)

MH Roll-call for water

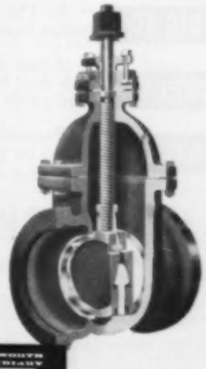


a CUP of WATER

Because until recently it always was available, a cup of water here has been considered a "little thing." Today, we suddenly realize that many water facilities are deficient . . . and a "cup of water" in some places no longer is a little thing!

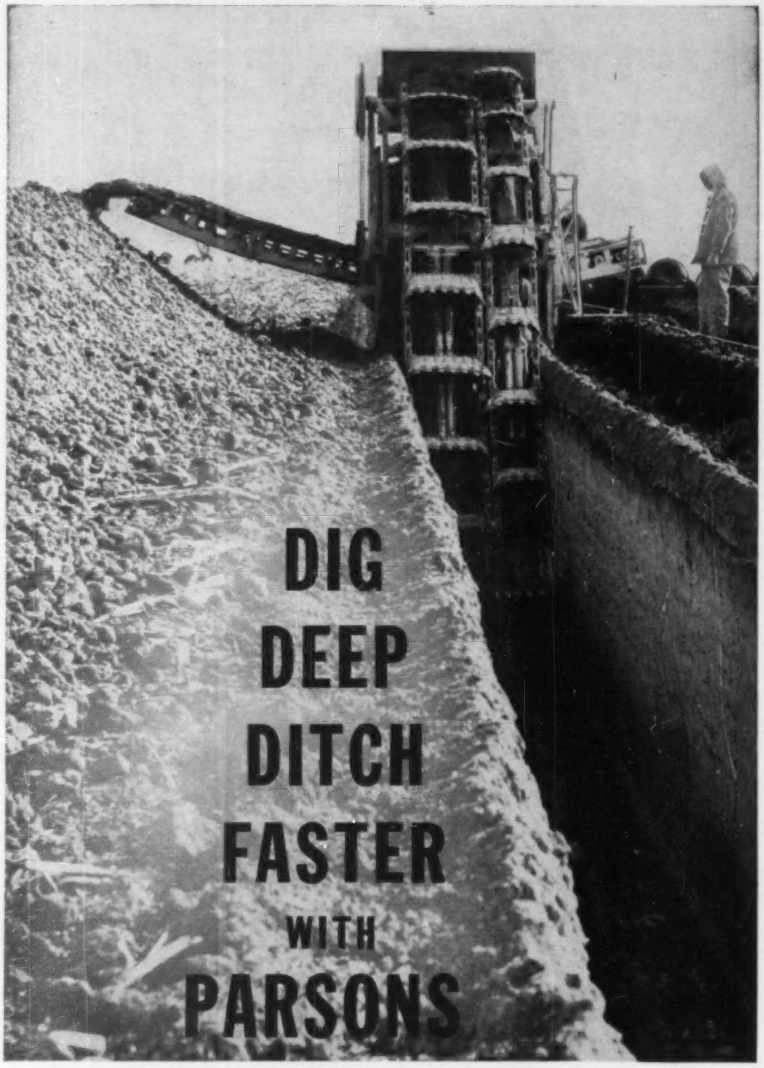
Of the total population, 26.6 per cent or approximately 25 million citizens of the U.S.A., definitely have inadequate water supply.* In addition water supply is uncertain for 23.2 per cent of the population or nearly 21 million more. Only 50.2 per cent of the population, or approximately 45 million people, enjoy adequate water service. Of 587 water works systems, serving 25,000 population or more each, service is inadaquate or uncertain in 255 of them! The U.S. Department of Commerce estimates that water supply facilities within the next 20 years will need to be doubled.

Municipal and utility officials know this situation but in many cases need better public support before they can make a move. In future advertisements, we will attempt to sketch brief facts about the water shortage of particular groups of states.



*Survey by Water and Sewerage Industry and Utilities Division, Business and Defense Services Administration, U.S. Department of Commerce, Washington, D. C.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA



TRENCHLINERS®

DIG 5' — the Parsons 77 in not much wider than a yardstick, yet digs to 5' depths, 6" to 18" wide, at speeds to 21 fpm.

DIG 10' — the 155 can dig within 21" of side obstructions at depths to 10'. Cuts widths from 16" to 26" up to 25 fpm.

DIG 12½' — if you need a ditch 16" to 42" wide at depths to 12½', (60" wide with dual boom to 10'-0" deep) the Parsons 250 is the machine for you. Digs up to 25 fpm.

DIG 19' — Parsons 310 Trenchliner delivers ditch from 24" to 60" wide at depths to 19' (72" wide with dual boom 14'-0" deep). Thirty digging feeds give utmost efficiency in any ground.

PARSONS COMPANY
Newton, Iowa

A Division of KOEHRING Company

See your distributor today or write for bulletin.

Please send information on Ladder Trenchliners.

Name____________________

Company____________________

Address____________________

City__________ State__________ P102AC

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Rotary Gang Mower

199 This rear-wheel drive and steering unit cuts a 70-inch swath, permits cutting width to be changed while you mow. It trims, mows, mulches, moves along at 5 mph. It's one of several models. For literature, write GRAVELY CLEAN-CUT MOWERS, P. O. BOX 736F, DUNBAR, W. VA.

Year 'Round Maintenance Tool

200 In winter this unit planes, breaks and removes ice and hard-packed snow; in other seasons, it maintains, cuts, grades all types of gravel and dirt roads. Why not ask Wausau IRON WORKS, WAUSAU, WIS., for literature on this truck grader-ice blade?

Municipal Castings Booklet

201 There are 168 pages devoted to gray and ductile iron casting in the current catalog offered by NEENAH FOUNDRY CO., NEENAH, WIS., which has 15,000 patterns and thousands of standard designs on hand to meet municipal casting needs.

Really Packs in Refuse

202 The Pak-Tainer refuse collection body, with two types of loaders—super single-arm and twin-arm—are subjects of a 6-page bulletin, available from THE COBEY CORP., GALION, OHIO. Operating advantages, operating sequence, specifications, and details of packer-plate operation are given.

Identification Markers

203 Street signs, golf course and historical markers, municipal building plaques and letters, memorial plaques—they're all represented and described in *Brochure* AC, available from LAKE SHORE MARKERS, INC., 654 W. 19TH ST., BOX 59, ERIE, PA.

Municipal Supplies Catalog

204 There's a wealth of products and supplies for municipalities small and large in 100-page *Municipal Supplies Catalog* No. 163. When making request, please specify title; write W. S. DARLEY & CO., CHICAGO 12, ILL.

Increases Se[illegible] Line Efficiency

205 Just pour Sanfax 222 into the manhole and this power-packed chemical compound will take it from there, burning out tree roots, trash and other impediments. It can also be used to prevent deposit build-up and to avoid clogging. For details, write SANFAX CORP., P. O. BOX 604, ATLANTA, GA.

Water and Gas Service and Roadway Boxes

206 A complete line of service and roadway boxes, manhole rings and covers (marked gas or water) are well displayed and detailed in current catalog offered by OPELIKA FOUNDRY CO., P. O. BOX 326, OPELIKA, ALA.

Patches Streets

207 Hot Roll delivers 5-ton compaction, water-tight seal. It's designed for asphalt street repair. For descriptive literature detailing this heated asphalt roller, write ELLIS DISTRIBUTING CO., LIBERTY, MO.

(See page 67 for more Bulletins)

20% MORE TRAFFIC...25% less congestion

in Minneapolis with EAGLE'S NEW "EC" SYSTEM

BRYANT AV
NO PARKING BUS STOP

The "EC" MASTER CONTROLLER is located outdoors on the highway's median strip. Severe temperature and humidity changes have not, in any way affected either the Master or Local operation.

OLSON MEMORIAL HIGHWAY, Minneapolis, Minn.
(less than one mile from loop area)

THE "EC" LOCAL CONTROLLER

is similarly located at eleven intersections along a one mile stretch of one of Minneapolis' heaviest traveled areas. Each of the Locals is capable of receiving a minimum of 224 traffic function messages from the Master Controller and transferring these messages to the intersection's traffic signals.

MINNEAPOLIS REPORTS, "during peak traffic loads it is not uncommon for the volume density on Olson Memorial Highway to reach levels as high as 200% over normal periods.

"Nevertheless, a continuing series of surveys and on-the-scene checks now reveal that congestion has been reduced 25%.

"As the news of the reduced congestion spread, more and more of the city's rush hour motorists chose this route which they had previously avoided. Yet, traffic still moves faster and more freely than ever before, despite an overall increase of 20%.

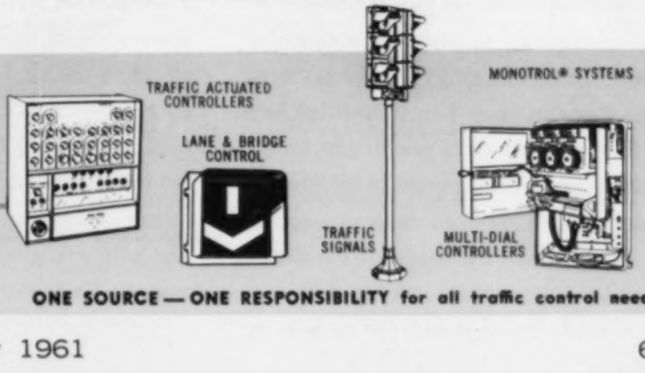
"We have every reason to be more than satisfied with the performance of this new "EC" system. It has achieved a dramatic alleviation of what was rapidly becoming one of our worst traffic problems."

BLISS

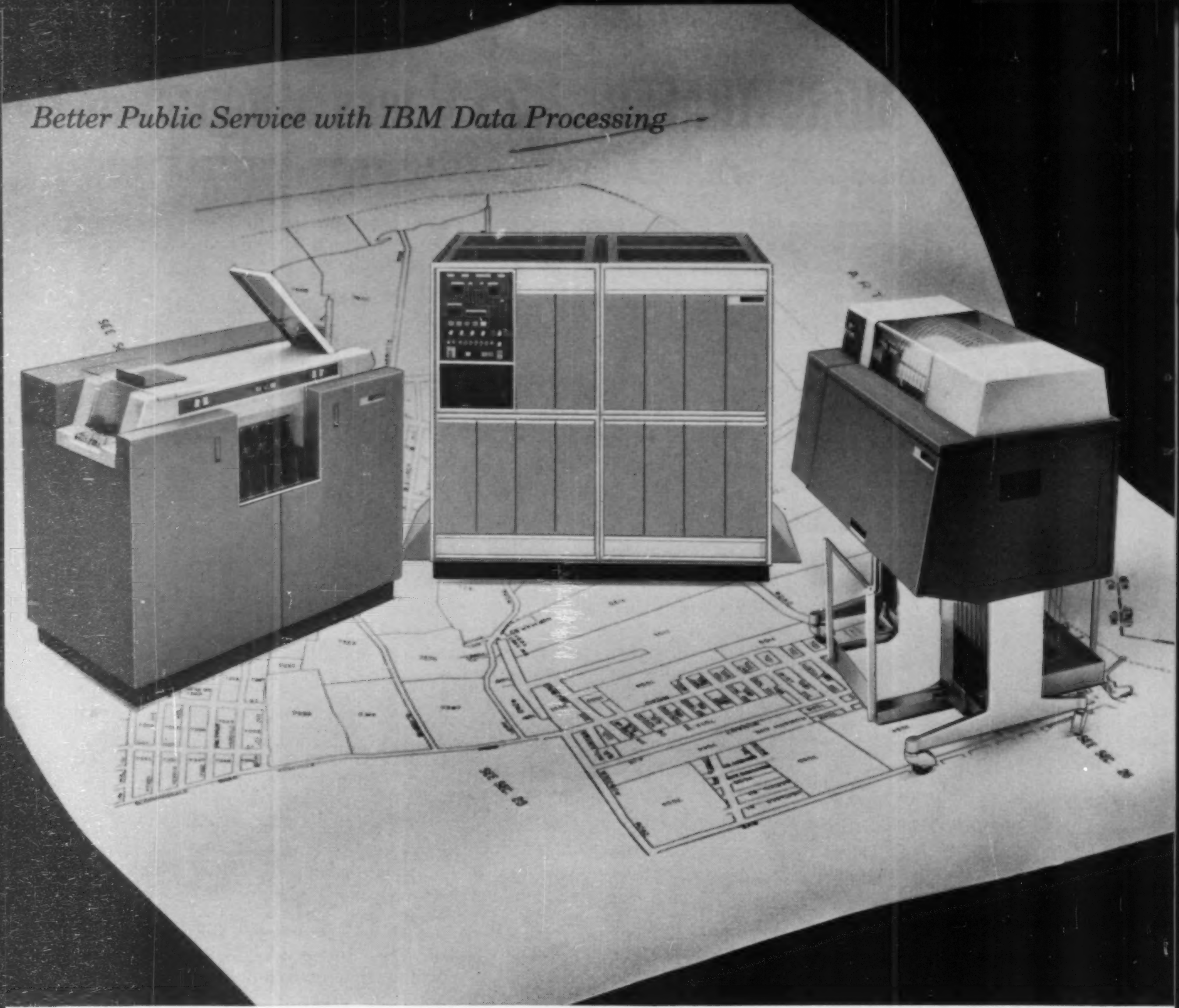
EAGLE SIGNAL COMPANY, Moline, Illinois

A Division of the Gamewell Company
An E. W. Bliss Company Subsidiary

Eagle Equipment Saves Lives — Saves Time



ONE SOURCE — ONE RESPONSIBILITY for all traffic control needs.



Complex tax procedures become simple routines ...with the IBM 1401 Data Processing System

You cut accounting costs...smooth out your work load...build public confidence when the low-cost IBM 1401 brings the speed and accuracy of electronics to your tax accounting.

The 1401 eliminates many time-consuming, repetitive steps in your tax accounting procedures. This modern data processing system accurately maintains and quickly updates the assessment record. It automatically applies the tax rate against the assessed evaluation and prints out the tax rolls and tax bills.

In addition, the versatile 1401 also gives you a working tool for scientifically computing assessments. After combining the property description with all the predetermined factors affecting the land and improvement values, it automatically computes the assessed valuation. It's simple...efficient...fast.

Get full details on how a small monthly investment can simplify your accounting procedures and help you give better service to your community. Call your IBM Representative today.

IBM®
DATA PROCESSING

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Heavy-Duty Mower

208 Full-fact folder gives special features, design and construction information, and specifications on Swivel-Guide mowers with variable pitch blade action. Write ROOF MFG. CO., PONTIAC 19, ILL.

Improved Pressure Distributor

209 You'll find just about every size, shape or style municipal casting in *Bulletin* MII, available from BUFFALO PIPE & FOUNDRY CORP., DEPT. J., BOX 55-STATION B DE 6764, BUFFALO 7, N. Y.

Weed Control Booklet

210 The manufacturer of SS Weed-Killer, a potent soil-sterilant that kills weeds fast and inhibits unwanted plant growth, has updated its booklet on weed control. Write C. B. DOLGE CO., WESTPORT, CONN. for your copy.

Suffering from Polluted Air?

211 A new descriptive brochure explains what industry can do to correct air pollution problems. It can be obtained from MUNICIPAL ENGINEER, DEPT. C, CATALYTIC COMBUSTION CORP., 4725 FOURTEENTH ST., DETROIT 8, MICH.

Stumps a Problem?

212 There is an economical as well as a quick way to remove troublesome, ugly tree stumps, and VERMEER MFG. CO., 1452 W. WASHINGTON, PELLA, IA., can tell you about it. Request literature on the Pow-R-Stump Cutter.

Improved Pressure Distributor

213 *Catalog* RS1256 supplies facts on the Model 424-56 pressure distributor, designed and tested by asphalt men for two years on every type and grade of asphalt available. For copy, write STANDARD STEEL WORKS, INC., NORTH KANSAS CITY, MO.

Stronger Sewer Pipe

214 Increased strength and durability are two advantages of reinforcing concrete sewer mains with steel wire fabric. For others, and details on USS American Welded Wire Fabric, write AMERICAN STEEL AND WIRE, DEPT. 1195, 614 SUPERIOR AVE., N.W., CLEVELAND 13, OHIO.

Golf at Night?

215 Why not, asks WIDE-LITE CORP., DEPT. JAII, 4114 GULF FREEWAY, HOUSTON, TEXAS, to tell you about shadow-free sports lighting that will increase revenue at golf courses as it extends the playing hours at the course past sunset.

Traffic Speed Recorders

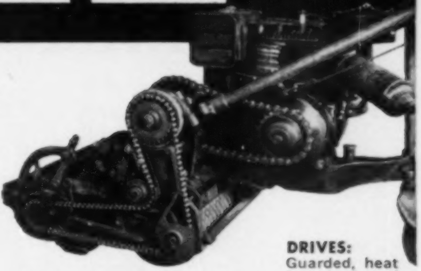
216 With these recorders a police officer can measure and record the speed of any vehicle day or night, and be assured that the courts will honor such evidence. The device is simple, requires only five minutes to set up, and is completely portable. You can make any officer an expert in the use of the recorder with only one hour of instruction. Write NATIONAL RECORDERS, 7646 LYNDALE AVE., S., MINNEAPOLIS 23, MINN. for details on Dowden Speed Recorders.

(See page 68 for more Bulletins)

ONLY Locke TRIPLEX MOWERS HAVE FULL CHAIN DRIVE!

Your best power lawn mower value is the versatile LOCKE Triplex!

Only LOCKE has all of its cutting units chain driven and counterbalanced. And, **only** chain driven cutters are perfectly synchronized, revolving at the same rate of speed, on wet or dry grass.



DRIVES: Guarded, heat treated and hardened steel sprocket roller chain.

BLADES: Heat treated and hardened alloy steel, motor driven spiral type reels, mounted on ball bearings.

LOCKE dependability, on any size lawn, makes it possible to meet critical work schedules, reduce cutting and trimming time by ½, maintain standout appearance.

SINGLES.........25" & 30"   **TRIPLEXS**........70" & 75"

Plain or reverse

8 Reasons Why Lockes Are Your Best Value:

1. No belts to slip.
2. Overhang raised borders by ⅓.
3. Turn at any angle, without raising units.
4. Gauge shoes prevent scalping; require less power to propel; less effort to manipulate.
5. Full floating cutters follow contour of the ground.
6. Side cutters raise vertically for storing and transportation.
7. B & S Motors are guaranteed and serviced by B & S, Locke and its dealers.
8. Riding sulkies attach in seconds.

Save time, money and energy! See your Locke Service Dealer now, for a Demonstration.

Locke POWER LAWN MOWERS
1315 Connecticut Avenue Bridgeport 1, Conn.
A product of Locke Steel Chain Co.

Send for these New Locke data sheets

Now is the time to take your grass cutting costs seriously. ASK YOUR LOCKE Service Dealer for the facts, or write.

Locke Mower Div.
Locke Steel Chain Co.
1315 Connecticut Ave., Bridgeport 1, Conn.

Gentlemen:

☐ We want a demonstration. Have your Dealer phone.

☐ Send your latest literature.

NAME ____________________

COMPANY ____________________

ADDRESS ____________________

CITY ____________ ZONE ______ STATE ________

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Street Sweeping Your Bailiwick?

217 Then you'll want to discover the advantages of Prostran bristles for street sweeper brooms. E.B. & A.C. WHITING CO., BURLINGTON, VT., can fill you in on the facts and performance of Prostran-Polypropylene. Just ask for literature.

Water Filter Sands and Gravel

218 When you specify Northern sand and gravel you get clean filtering media that have been carefully graded and with the chemical and physical properties needed to assure proper filtering in the most meticulous water filtering plant. Write NORTHERN GRAVEL CO., P. O. BOX 307, MUSCATINE, IOWA.

Packaged Centrifugal Pumps

219 *Bulletin* 117 PKG provides cross-sectional views, construction specifications, performance charts and dimension data on the new "packaged line" of Type GP close-coupled end-suction centrifugals announced by AURORA PUMP DIVISION, THE NEW YORK AIR BRAKE CO., AURORA, ILL. Capacities up to 400 gpm; heads up to 150 feet.

Facts About Street Lighting

220 Engineering specifications on five styles of attractively designed high-strength steel street lighting standards are given in the new Octa-Tube booklet available from MILLERBERND MFG. CO., WINSTED, MINN. Booklet also tells how up-to-date street lighting benefits communities.

Gang Mowers

221 For golf courses, municipal plant grounds, airfields, parkways and expressways, etc.—there's a model and size Roseman gang mower to fit every need. Available in 3, 5, 7 and 9 gangs. For descriptive brochure, write ROSEMAN MOWER CORP., EVANSTON, ILL.

Kills Mosquito Larvae 20 Times Faster

222 No species is immune. Kill in breeding places, swamps, catch basins, ditches, etc. is 100%. And all you have to do is toss them into infested water. For full-fact literature on Tossits, write WYCO INTERNATIONAL, 4811 CARNEGIE AVE., CLEVELAND 3, OHIO.

Street Name Signs

223 This new catalog introduces a low-cost, one-piece aluminum alloy sign and bracket assembly, developed by LYLE SIGNS, INC., 2722 UNIVERSITY AVE., S. E., MINNEAPOLIS 14, MINN., in addition to presenting a wide variety of highly readable, durable sign styles available from Lyle.

Improved Water Works Products

224 Check valves, gate valves, fire hydrants—there's much that's new and improved in design and construction. To find out full facts, request descriptive literature from EDDY VALVE CO., WATERFORD, N. Y.

Street Sweepers

225 M-B CORP., NEW HOLSTEIN, WIS., manufactures a complete line of sweepers for municipal use. Current literature gives details on tractor and loader-mounted units, for snow removal, general sweeping and engine-driven or tractor-driven, pull-type sweepers.

Protection for Work Crews

226 New catalog from EASTERN METAL OF ELMIRA INC., 139 GRAND CENTRAL AVE., ELMIRA HGHTS., N. Y., will be of interest to municipal work crews, police, firemen—anyone whose safety depends upon his visibility. Catalog describes new Safety-Glo traffic clothes that offer day and night-time protection.

Heavy-Duty Pipe Cutters

227 Water works men will appreciate the rugged construction of these pipe cutters, designed for pipe up to 16 inches in diameter. They assure no pipe breakage, re-cutting or spoilage. Three sizes available. Write ELLIS & FORD MFG. CO., 1100 COOLIDGE RD., BIRMINGHAM, MICH.

Incinerators

228 Up-to-date waste disposal methods engineered to the needs of the community is a specialty of MORSE BOUGLER, INC., 80 FIFTH AVE., DEPT. 20-A, NEW YORK 11, N. Y. For facts on municipal incineration, write the company.

Nonfogging Water Meters

229 These magnetic drive registers are always easy to read. They are hermetically sealed against dirt, water and vapor and available in split-case or frostproof models. For catalog, write BADGER METER MFG. CO., 4545 BROWN DEER RD., MILWAUKEE 23, WIS.

(See page 71 for more Bulletins)

Let automatic alarms keep your chlorination on the BEAM

Convert your chlorine system to a system that watches itself, monitors its own results. Conversion is easy with Wallace & Tiernan Automatic Alarms. These dependable warning devices aid in overall operating efficiency . . . give you the final assurance that your system is operating properly, that your water is safe. And these alarms are flexible enough to tie in with any physical layout, any type of signal.

W&T Alarms warn of any deviation from desired performance. You get audible or visible warnings, at or remote from the chlorinator. Alarms warn you of dangerous pressure increases, lowered or exhausted chlorine supply, malfunctions in auxiliary equipment, and other hazards. And, to keep your system "on beam" at all times, alarms show residuals outside pre-set limits.

With automatic alarms by Wallace & Tiernan you avoid dangerous underchlorination and wasteful overchlorination. You save man-hours for more efficient use of personnel.

For more information, write Dept. S-143.00

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

Control sewage grease and odor with low-cost Solvay Ozene

Clogging grease build-up and a flood of odor complaints are serious sewage plant problems. A few parts per million of Ozene trickled into the sewage system economically controls both problems.

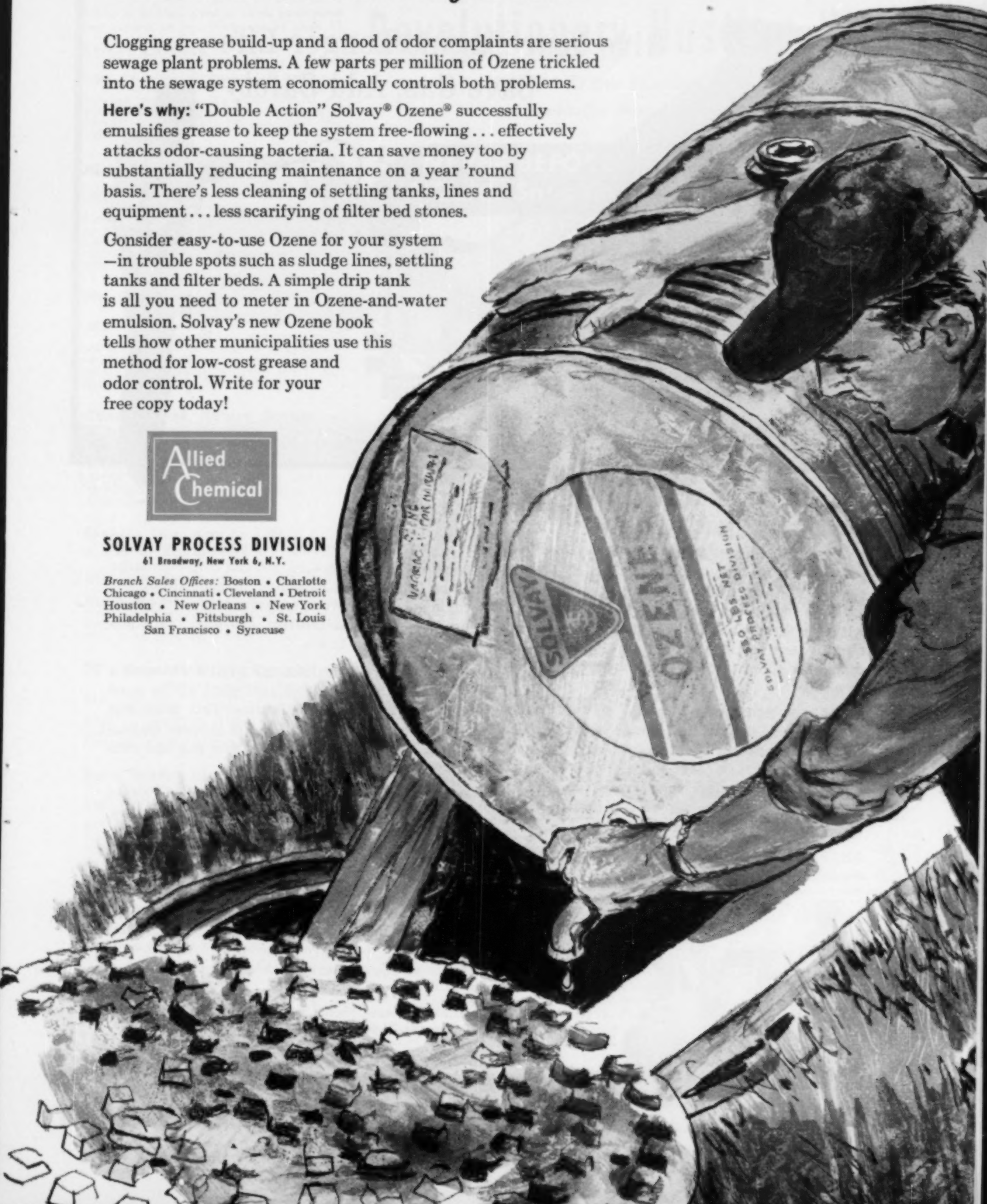
Here's why: "Double Action" Solvay® Ozene® successfully emulsifies grease to keep the system free-flowing . . . effectively attacks odor-causing bacteria. It can save money too by substantially reducing maintenance on a year 'round basis. There's less cleaning of settling tanks, lines and equipment . . . less scarifying of filter bed stones.

Consider easy-to-use Ozene for your system —in trouble spots such as sludge lines, settling tanks and filter beds. A simple drip tank is all you need to meter in Ozene-and-water emulsion. Solvay's new Ozene book tells how other municipalities use this method for low-cost grease and odor control. Write for your free copy today!

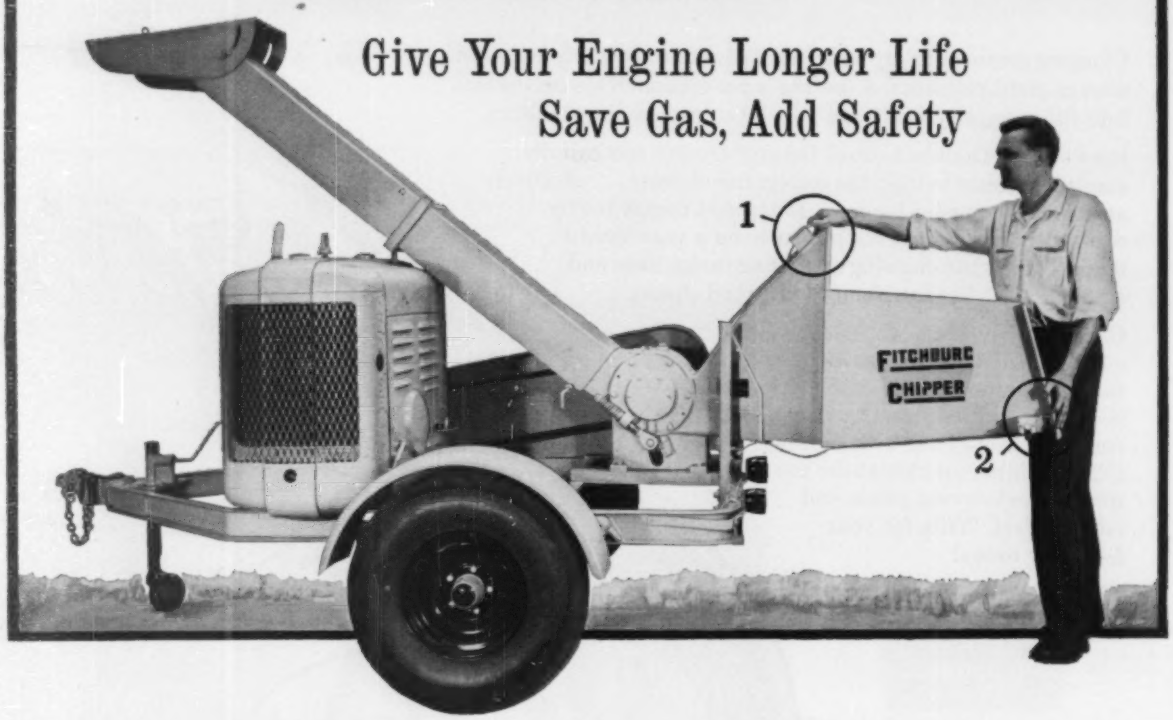
Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N.Y.

Branch Sales Offices: Boston • Charlotte
Chicago • Cincinnati • Cleveland • Detroit
Houston • New Orleans • New York
Philadelphia • Pittsburgh • St. Louis
San Francisco • Syracuse



2 NEW FITCHBURG CHIPPER FEATURES



Give Your Engine Longer Life
Save Gas, Add Safety

1 **EXTRA PROTECTION** for your crews with this NEW SAFETY STOP SWITCH that stops all moving parts of the chipper within seconds. Switch is within easy reach at rear so operator can flip it without moving from feed position. An important new feature of the Fitchburg Chipper, *already considered safest* because it has no hard-to-control flywheel.

2 **GREATER ECONOMY** with this NEW SOLENOID SWITCH* which allows the operator to quickly idle the motor between actual brush feedings. With the motor idling, you save on gasoline and engine wear; and there's less noise, which pleases the public. Your operator can use the switch easily because it is at the rear and handy.

CHIPPING IS SMOOTHER and faster with a Fitchburg because of its exclusive *spring activated feed plate.* This patented feed plate "gives" *automatically* under pressure. You can chip even large limbs (up to rated capacity) without killing the engine. And your crews are safer because the feeding action is more positive, smoother, with less whipping of the brush.

CHIPPING IS MORE EFFICIENT with a Fitchburg. The exclusive feed plate allows wood to be chewed up in small bites. This takes less power, and the engine can be run at lower r.p.m.—which is more efficient, saves you gas and cuts engine wear.

TROUBLE-FREE Fitchburg Chippers stay out of your shop so you don't lose valuable man-hours. These rugged machines are the choice of tree surgeons, line clearance contractors and others—men who depend on Chippers day after day to make money. Blades are made from special alloy steel to hold a keen edge for a long time, even with hard use. Fitchburg Chippers are well-engineered, come in four sizes to meet your needs: the largest handle limbs as thick as seven inches with ease.

A FREE BOOK "Chip Dollars" should be in your hands if you deal with brush disposal. 20-pages. Write for free copy—Dept. AC- 17.

*optional equipment

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Street Lighting

230 *Brochure* ALS-5 supplies a wealth of valuable information for those concerned with street lighting and relighting programs. It's published by aluminum-lighting standard manufacturer PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J.

Air Release Valve

231 Designed to remove excess air and prevent air lock at high points in pipelines. Increases pumping efficiency. Available in 1- and 2-inch sizes up to 250 psi. *Bulletin* 1206 supplies facts; write SIMPLEX VALVE AND METER CO., DEPT. MI-41, 7 E. ORANGE ST., LANCASTER, PA.

Pipeline Inspection by TV

232 Sewer, water, gas lines and conduit can be inspected effectively by closed-circuit TV. It eliminates guess work, pinpoints trouble spots immediately, and provides a permanent record. For details, write INSPECTOLINE INC., 9501 EUCLID AVE., CLEVELAND 6, OHIO.

Cone-Shaped Refuse Burner

233 Interested in a unit that's capable of increasing landfill life many times? One that's proved its efficiency, economy and safety? WILCO MACHINE WORKS, INC., BOX 3897AC-6, MEMPHIS 14, TENN., will provide complete information.

Enables One Man to Lift a Ton of Equipment

234 *Bulletin* GC-100 supplies factual information on an elevating trailer that hauls, unloads, re-loads, and lifts its own load in seconds. It's ideal for moving grounds care equipment. For copy, write TRAILEVATOR DIV., MAGLINE INC., P. O. BOX 46, PINCONNING, MICH.

50% Greater Billing Capacity

235 . . . achieved through the use of 25% less equipment. This record of municipal accounting efficiency belongs to Suburban Water Systems, La Puente, Calif. For full story, write BURROUGHS CORP., DETROIT 32, MICH.

Steel Water Storage Tanks

236 The latest steel tank brochure available from STEEL PLATE FABRICATORS ASSOCIATION, 105 W. MADISON ST., CHICAGO 2, ILL. discusses the inherent qualities of welded steel construction and its importance in the fashioning of water storage facilities.

Weigh Feeder Machines

237 These diminishing batch weigh feeder machines are designed for the accurate feeding of dry chemicals required in sewage treatment and water filtration plants. Catalog gives details; write SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

Tax Appraisals

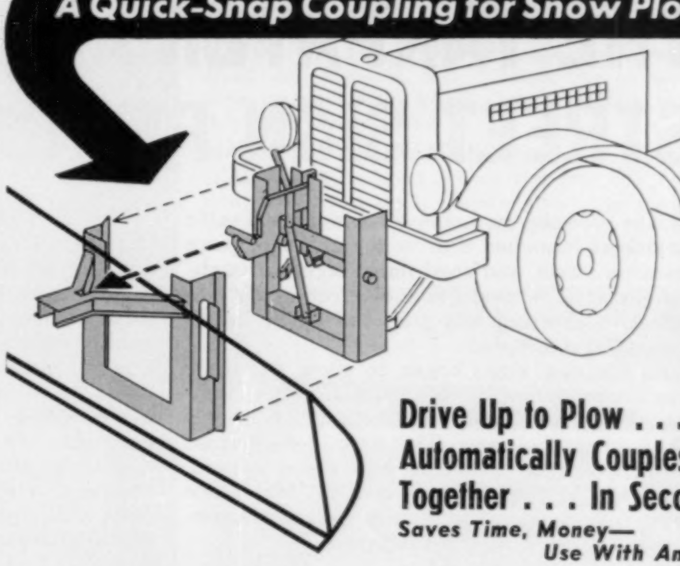
238 THE J. M. CLEMENSHAW CO. specializes in the revaluation of municipalities and rural property for local tax equalization purposes. For brochure and client list, write to the company at 1601 BROOK ROAD, CLEVELAND 9, OHIO.

(See page 77 for more Bulletins)

NOW! Buy Any Make Snow Plow with Revolutionary Husting Hitch

DEMAND the Husting Hitch on
Your Favorite Make of Snow Plow

NEVER BEFORE!
A Quick-Snap Coupling for Snow Plows!



Drive Up to Plow . . . Hitch Automatically Couples Together . . . In Seconds!

Saves Time, Money—
Use With Any Plow

The Husting Hitch is Now Available on Every Make Snow Plow Listed

- BALKO
- FLINK
- GLEDHILL
- GOOD ROADS
- ROOT
- VALK
- WISCONSIN SPECIAL

The Husting Hitch

The revolutionary new HUSTING HITCH (patented) does what no other so-called fast coupling can do . . . offers true one man operation in just seconds without leaving the cab. Disengaging is just as easy.

The Spring Pin Action does the trick. The spring loaded pins snap into slots (see illustration) when the truck is driven up to the plow. Standard Hydraulic Controls then permit the driver to lift the plow and get under way without leaving the cab.

HUSTING HITCH equipped Snow Plows and Trucks are interchangeable. Once equipped, the truck can pick up any similarly equipped Plow, be it a Vee, Rigid One Way, Reversible or Trip Blade. ANY TRUCK CAN BE USED ON ANY PLOW.

The HUSTING HITCH has been offered for sale commercially and been in field use from New York to Minnesota since 1955. Each year sales have increased and our claims are based on the experience gained by well over 1,000 installations.

The Husting Flexible Link

A newly developed FLEXIBLE LINK (Pat. Pend.) gives HUSTING HITCH equipped plows additional freedom to follow the contour of difficult roadbed conditions found at some intersections and in alleys. It permits the snow plow to rotate about a central axis. Springs are used to hold the plow level in the carry position and prevent it from going out of control when in action next to a ditch.

The patented HUSTING HITCH (Standard or in combination with the FLEXIBLE LINK) can do a job for you. It is rugged, dependable and foolproof. Be sure to ask for it on your favorite make of Snow Plow. For further information write for descriptive literature and learn about this really new development in Snow Plow Couplings.

KASTEN MANUFACTURING CORPORATION

MARKET 9-2311 ALLENTON, WISCONSIN

ST. LOUIS COUNTY

When citizens of St. Louis County, Missouri, saw easy-to-read street name signs going up, they liked the idea. "Not one complaint," says County Highway Engineer John J. Leslie...

"THE TAXPAYERS FAVOR THIS STREET SIGN PROGRAM 100%!"

In late 1958 the St. Louis Metropolitan Traffic Engineers launched a drive for uniform, more readable street and road name signs throughout the area. A model sign of green and white reflective sheeting was proposed by St. Louis County and adopted.

As the new signs began to show up, there was favorable public comment. County Highway Engineer Leslie recalls that the people liked what they saw. The signs, reflectorized with "Scotchlite" Sheeting, were easier to read, especially at night. "As a result," Mr. Leslie says, "every penny spent has been enthusiastically endorsed by our taxpayers."

The City of St. Louis and the Missouri Highway Department also began to install uniform white-on-green signs at corners and intersections. In addition, over 20 local municipalities took part in the program. Here, too, public response was immediately enthusiastic. The St. Louis County municipalities with the latest look in street name signs include: *Bellefontaine Neighbors, Berkeley, Crestwood, Ferguson, Florissant, Hazelwood, Kirkwood, Lakeshire, Marlborough, Moline Acres, Olivette, Overland, Peerless Park, Richmond Heights, Rock Hill, Shrewsbury, Sunset Hills, Sycamore Hills, University City, Wilbur Park, Winchester.*

COUNTY TRAFFIC COMMISSIONER Daniel J. Hanson (left) and Shrewsbury Street Commissioner Edmond Flavin examine one of the new street assemblies made with "Scotchlite" Reflective Sheeting.

DEVILLE AV.
WEIL AV.

DEVILLE AV.
WEIL AV.

MAYOR WALTER L. MEYER (above) of Bellefontaine Neighbors, Missouri, says, "People like to see where their tax dollars are going. Our community is all for this street sign program."

MAYOR GEORGE HELMSING of Shrewsbury, Missouri, exclaims, "So satisfied are we with our new reflectorized street name signs, we now plan to reflectorize all our Stop signs and city entrance signs."

RIO ST
ST LOUIS COUNTY LINE
LACKLAND RD
PORTSMOUTH DR

MAKING OR MAINTAINING SIGNS is efficient and economical when a "Scotchlite" Vacuum Applicator does part of the work. William Wenzel of the St. Louis County Sign Shop shows how the applicator permanently bonds reflective sheeting to aluminum panels with professional-looking results.

***FOR MORE FACTS** about a popular program of street or road name signs for your community, see your 3M Representative. Or write to Dept. RBK-71, 3M Co. St. Paul 6, Minn.*

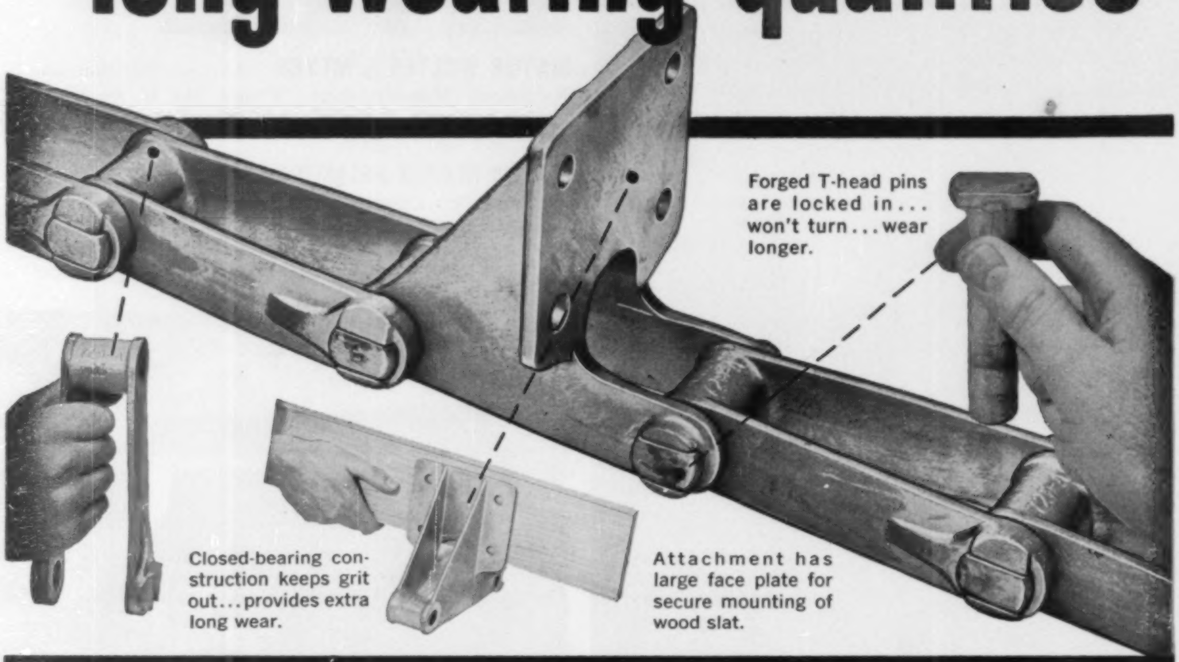
SAME LOOK AT NIGHT carries out the logic of sign uniformity around the clock. This sign, made of "Scotchlite" Reflective Sheeting, is always on duty. It never leaves motorists in the dark.

SCOTCHLITE®
BRAND
REFLECTIVE SHEETING

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

"SCOTCHLITE" IS A REGISTERED TRADEMARK OF 3M COMPANY

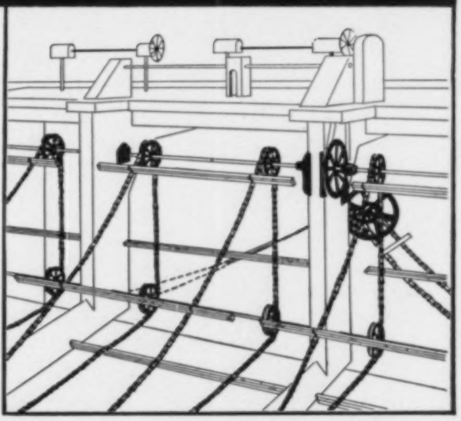
Why Moline long pitch pintle chain has long wearing qualities



Forged T-head pins are locked in... won't turn... wear longer.

Closed-bearing construction keeps grit out... provides extra long wear.

Attachment has large face plate for secure mounting of wood slat.



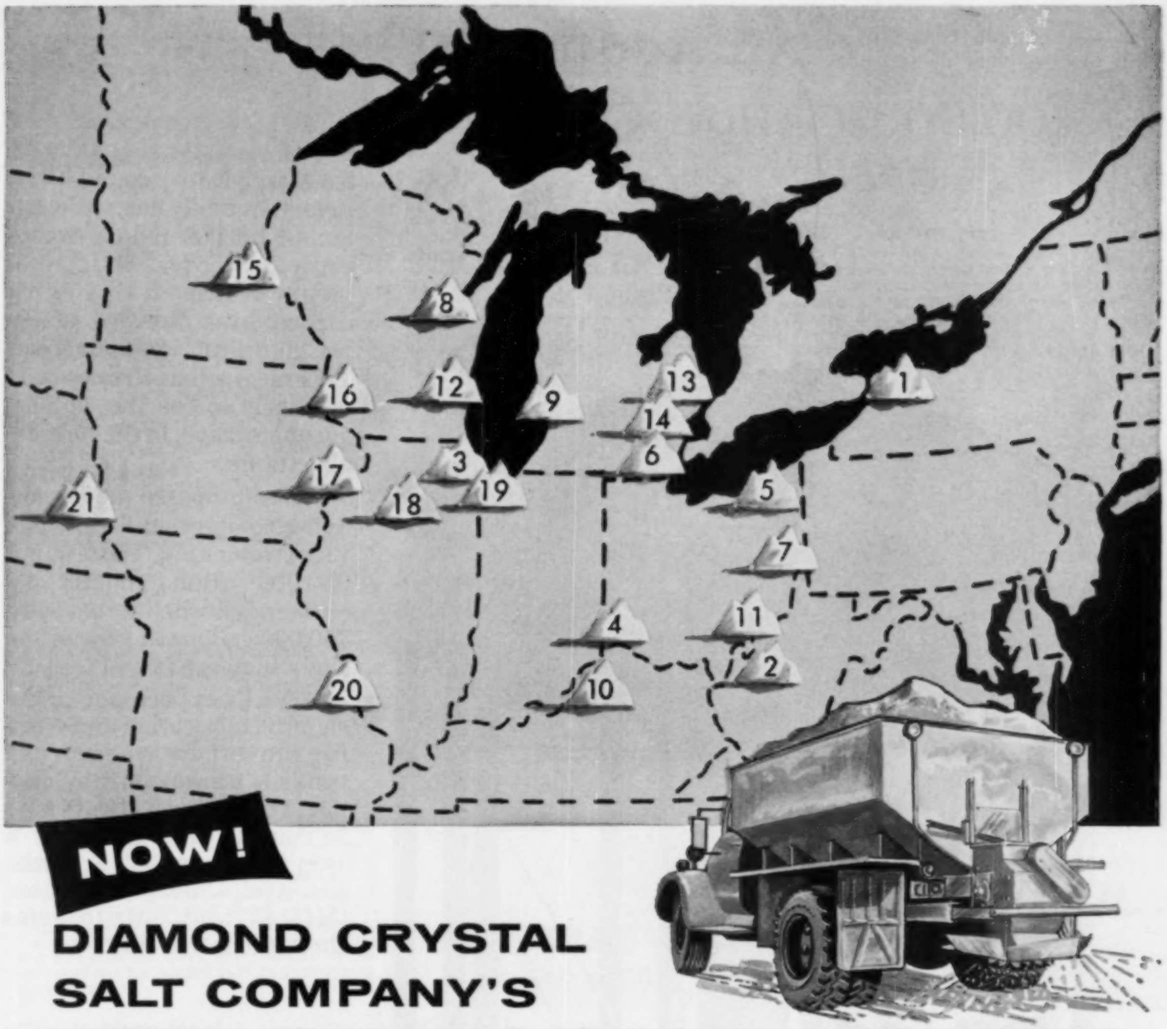
For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight... is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning... prevents the entrance of grit... minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

Write for information and prices or phone your local Moline representative.

LEADERS FOR 60 YEARS

Moline
MALLEABLE
Chains

MOLINE MALLEABLE IRON CO.
St. Charles, Illinois
Specializing in the Manufacture of Chains



NOW!

DIAMOND CRYSTAL SALT COMPANY'S

NEW ROCK-SALT DEPOTS

offer fast, economical service for snow & ice removal salt

With storage depots strategically located (see keyed map) throughout the snow and ice belt, Diamond Crystal Salt Company can supply all your salt requirements in the shortest possible time. Be sure—play it safe—call your nearest Diamond Crystal sales office for fast service.

1. Buffalo, New York
2. Charleston, West Va.
3. Chicago, Illinois
4. Cincinnati, Ohio
5. Cleveland, Ohio
6. Detroit, Michigan
7. East Liverpool, Ohio
8. Green Bay, Wisconsin
9. Holland, Michigan
10. Louisville, Kentucky
11. Marietta, Ohio
12. Milwaukee, Wisconsin
13. Port Huron, Michigan
14. St. Clair, Michigan
15. Minneapolis, Minn.
16. Prairie du Chien, Wis.
17. Davenport, Iowa
18. La Salle, Illinois
19. Michigan City, Ind.
20. St. Louis, Missouri
21. Omaha, Nebraska

Diamond Crystal Salt Company

ST. CLAIR, MICHIGAN

75th Anniversary 1886–1961

PLANTS: AKRON, OHIO; JEFFERSON ISLAND, LA.; ST. CLAIR, MICH.
SALES OFFICES: AKRON • ATLANTA • BOSTON • CHARLOTTE • CHICAGO
DETROIT • LOUISVILLE • MINNEAPOLIS • NEW ORLEANS • NEW YORK

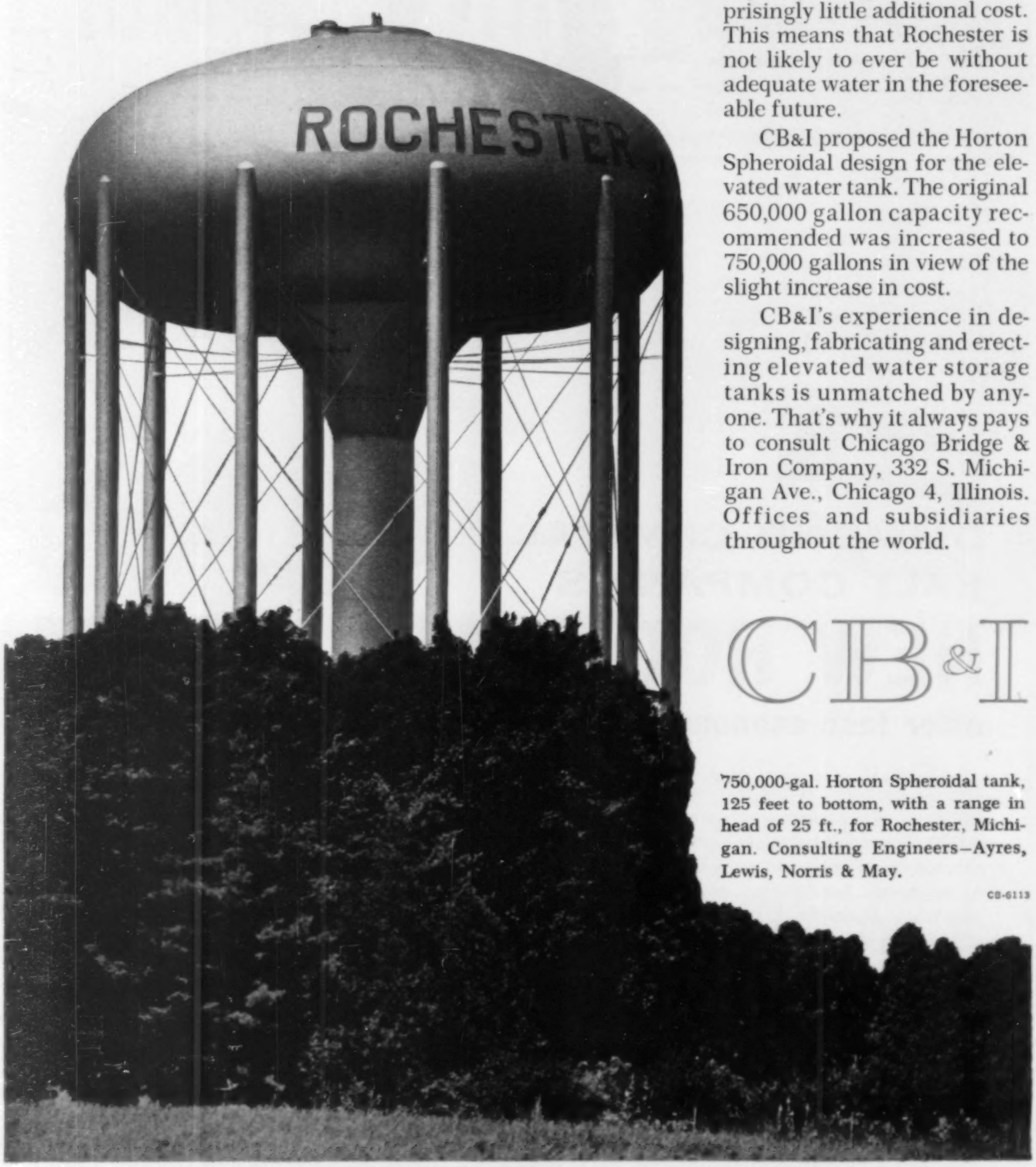
An Additional 100,000 Gallon Capacity ...A Bonus for Little Extra Cost

A 750,000 gallon elevated steel water tank for a village of 5,400 people may sound like a luxury. Actually it is, to the extent of 100,000 gallons excess capacity over present requirements. However, this extra capacity was provided at surprisingly little additional cost. This means that Rochester is not likely to ever be without adequate water in the foreseeable future.

CB&I proposed the Horton Spheroidal design for the elevated water tank. The original 650,000 gallon capacity recommended was increased to 750,000 gallons in view of the slight increase in cost.

CB&I's experience in designing, fabricating and erecting elevated water storage tanks is unmatched by anyone. That's why it always pays to consult Chicago Bridge & Iron Company, 332 S. Michigan Ave., Chicago 4, Illinois. Offices and subsidiaries throughout the world.

CB&I



750,000-gal. Horton Spheroidal tank, 125 feet to bottom, with a range in head of 25 ft., for Rochester, Michigan. Consulting Engineers—Ayres, Lewis, Norris & May.

CB-6113

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Radial-Type Portable Air Compressors

239 . . . have been redesigned to add even more punch to your pneumatic hammers. Every model (from 30 to 125 cfm) in this compact, direct-drive line of air compressors has been re-designed to assure greater portability, easier servicing, and 12-volt start system. For literature, write P. K. LINDSAY CO., INC., 97 TILESTON ST., EVERETT 49, MASS.

Aerial Ladders

240 Catalog literature will acquaint you with the Sponco line of aerial ladders—those especially built for fire department use, and service and utility aerials—which are elevated by electro-hydraulic power. Write SPONHALTZ ENTERPRISES INC., 1007 NORTHWEST 36TH ST., OKLAHOMA CITY 18, OKLA.

Fluorescent Traffic Cones

241 Plastisol fluorescent traffic cones reflect light, can be lighted from within and used as safety island markers or for night-time utility use. Stand 18 inches high, resist cold weather breakage. Also available in standard yellow. Write JOBET INDUSTRIES, INC., 547 W. SOUTH PARK AVE., OSHKOSH, WIS.

For Every Municipal Mowing Job

242 You can mow grass wet or dry, or that is high or low with the rugged, hammer-knife mowers of the Mott Corp. They will cut from an 18 in. to 19-ft. swath and shred and deflect clippings to the ground, thus minimizing the danger of flying debris. 38 models are designed to meet every need. Write the company for details at P. O. Box 278-10, La Grange, Ill.

This is Hercules

243 . . . is the title of *Form* No. 339, which introduces the products and facilities of HERCULES STEEL PRODUCTS CO., GALION, OHIO, manufacturer of steel and aluminum material-hauling dump bodies and dump trailers, hydraulic hoists and special truck equipment.

Refuse-Sewage Disposal System

244 COMBUSTION ENGINEERING, 200 MADISON AVE., NEW YORK 16, N. Y., has news for the small and large community looking into the possibility of treating both refuse and sewage sludge at the same plant site. It will explain benefits and details on request.

Street Sign Costs Drop

245 . . . as quality goes up, and maintenance is simplified. Director of Public Works at Green Bay, Wis., found this to be the case when he built his sign program around "Scotchlite" reflective sheeting and aluminum sign blanks. Write 3M CO., ST. PAUL 6, MINN. for details.

Turf Tractor

246 TORO MFG. CORP., MINNEAPOLIS 6, MINN., has just released a 4-page illustrated bulletin on its new, versatile tractor — Model V — built especially for turf use and able to accommodate a variety of mowing combinations and accessories to handle most turf maintenance problems.

Simplifies Traffic Sign Assembly

247 Pre-cut aluminum numbers, letters, arrows, shapes, corners, and borders enable you to make signs to interstate specifications easily and economically in the shop or on the job site. For a copy of free catalog of Miro-Flex individual cutouts, write THE MIRO-FLEX CO., INC., 1824 E. SECOND ST., WICHITA 14, KANS.

Vacuum Filters

248 Economic and efficient filtration of swimming pool or industrial process water is the subject of *Bulletin* Ref. No. 1860.20-2. Products graphically detailed include circular and flat leaf vacuum filters, new compact screw-type feeder, and compact chlorinizer. Write B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE, R. I.

Rugged Power Digger

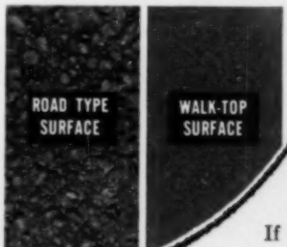
249 That's the Sherman C-8 Bobcat, which proves its mastery of big holes by digging clean, straight-sided bell holes fast and inexpensively. It can dig a small hole, too. Descriptive brochure will give full facts; write TRACTOR AND IMPLEMENT DIV., FORD MOTOR CO., BIRMINGHAM, MICH.

1961 Jeep Vehicles

250 These units are well known for their ruggedness, versatility, economy and ability to deliver more power and bigger payloads at lower cost. For 1961 there's much that's improved about them. Request a copy of "Jeep—4-Wheel Drive Vehicles" from WILLYS MOTORS, INC., TOLEDO, OHIO.

JUST FOR FUN..
SURFACE WITH WALK-TOP
AND FORGET PLAY AREA PAVING HEADACHES

SEE THE DIFFERENCE WALK-TOP MAKES!



Walk-Top (a fibre-filled emulsified asphalt) not only smooths out rough, abrasive pavements; it also puts *color* . . . black, red or green . . . on play areas, walks and drives.

Park officials across the nation are specifying Walk-Top with confidence. If you are not now using it, get in touch with our nearest office and discover how easy it is to eliminate surfacing problems.

American Bitumuls & Asphalt Company

320 MARKET STREET, SAN FRANCISCO 20, CALIFORNIA
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

Talk About Acceptance...

FOUR FEATURES MAKE LOAD-PACKER MOST ECONOMICAL TO OPERATE

Designed into the Load-Packer 600 are four exclusive features that substantially reduce operating costs:

The fast, 10-second packing cycle, faster than any competitive unit, allows the engine to run at accelerated speeds up to 30% less than other packers.

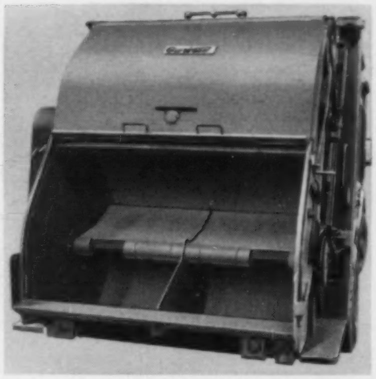
The big hopper, largest and lowest of any packing machine, allows fewer packing cycles.

The hydraulic system operates at lower pressures for less strain on the system. And the Load-Packer's exclusive dual-volume pump reduces strain on the drive line by 33%.

The simplified design has fewer moving parts . . . less to go wrong. And the controls are so simple they are virtually foolproof, even for inexperienced operators.

CITY OF HOUSTON recently filled out its fleet of 29 Gar Wood Load-Packers. Through a lack of dead weight and unexcelled weight distribution, the Load-Packer gives cities the biggest legal loads. Whatever the state restrictions, the Load-Packer hauls more refuse per trip within legal road limits.

HEMPSTEAD, LONG ISLAND, operates a fleet of 19 Gar Wood Load-Packers. In addition to being the fastest and most efficient packing machine, the Load-Packer is also the easiest to maintain. Its design is a model of simplicity, cutting even routine maintenance to a bare minimum.



NEW COMPARTMENTED LOAD-PACKER allows combustibles and noncombustibles to be handled with one crew, one truck, one trip. Compartmented body keeps materials separated with a watertight seal, allows dumping at different discharge points.

RIVERSIDE, CALIF., one of the country's most progressive cities in public works, owns 18 Load-Packers. Combining the fastest operation with the greatest compaction, the Load-Packer offers cities the best service at the lowest cost.

MIAMI BEACH STANDARDIZES ON GAR WOOD LOAD-PACKER

With several million visitors arriving each season, and with a reputation for beauty to maintain, Miami Beach is demanding in its refuse collection requirements. Hotels, restaurants, and business establishments are serviced daily, apartment buildings every two days. The job must be done as fast and efficiently as possible.

To find the best machine for this job, the city tried and tested several competitive packers. The result: Miami Beach chose the Load-Packer exclusively, and now operates a fleet of 33 units.

CITY OF SAN DIEGO
PUBLIC WORKS DEPARTMENT
SANITATION DIVISION

SAN DIEGO owns a modern fleet of Gar Wood Load-Packers. With simple, foolproof controls and a low loading height, the Load-Packer makes the crew's job easier, safer. It's the one packing machine that's tops for crews and public works management alike.

GAR WOOD'S GOT IT!

Major Cities Pick Load-Packer for Bigger Loads, Greater Compaction, Lower Operating Costs

HELP MAKE BUFFALO
THE CLEANEST CITY
IN THE NATION

BUFFALO GOES GAR WOOD—BASED ON SOUND EXPERIENCE

Jim Hayes

After 24 years of experience with refuse collection equipment, Jim Hayes, Motor Equipment Maintenance Superintendent of Buffalo, N.Y., knows the relative merits of packing machines as well as any man. His judgement: "The Gar Wood Load-Packer is the best refuse collection unit made."

Hayes is in charge of Buffalo's fleet of 54 Load-Packers. Twenty-six of these are new Load-Packer 600's. Says Hayes: "I've learned, through experience, that there is a difference in equipment, and that difference shows up in quality—the kind of quality Gar Wood builds into every unit."

The low operating cost of this machine was an important factor behind the city's purchases, as was the excellent service supplied by their Gar Wood distributor.

In Buffalo, as in every other city in which Load-Packers are used, taxpayers are getting the best possible service at the lowest possible cost.

GAR WOOD PAX-ALL CONTAINERS CUT COSTS ON COMMERCIAL ROUTES

Increased speed in refuse collecting means fewer man-hours, lower labor costs, lower operating costs. On commercial routes, Gar Wood's Pax-All Container System offers just that.

The completely hydraulic operation of this system is controlled with one lever. Pax-All containers snap quickly on and off without use of chains or cables. And the Pax-All system is *faster* than the cable method on other packing machines.

WAYNE, MICHIGAN—Gar Wood Industries, world's pioneer in the design and development of refuse collection equipment, has received strong acceptance from major cities across the nation. A few of the thousands of municipalities that maintain fleets of Gar Wood Load-Packers include:

Chicago
Los Angeles
Philadelphia
Detroit
Jersey City
Boston
Baltimore
Richmond
Miami
Birmingham
Tampa
Mobile
Salt Lake City
Oklahoma City
Cincinnati
Atlanta

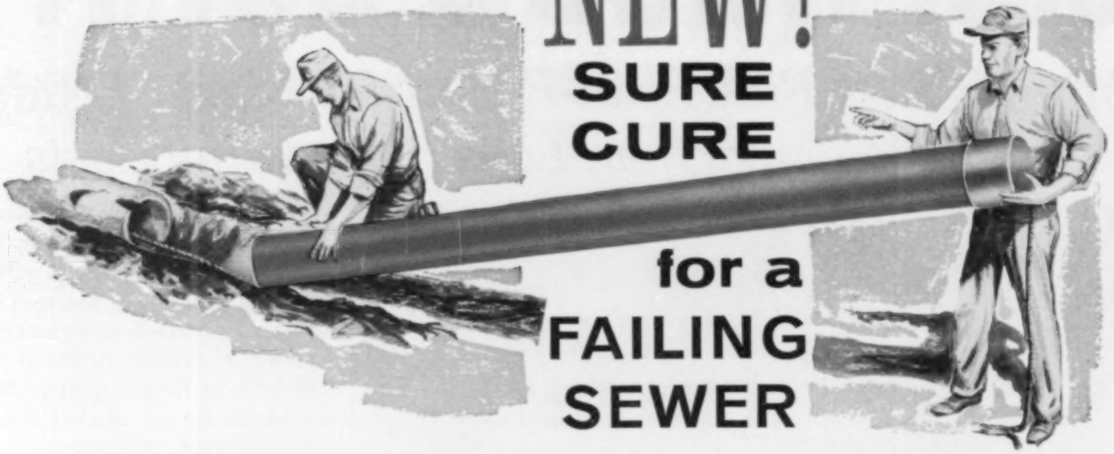
Part of the reason for this nation-wide acceptance is the cost-cutting efficiency of the Load-Packer 600. On a recent independent test, it packed *25-52% more pounds per minute* than competitive units. A crew working with a Load-Packer is able to work at least a *10% longer route*, and *nine* Load-Packers can easily do the work of 10 competitive machines. The resultant savings in labor, maintenance, and capital investment are tremendous.

Some cities chose the Load-Packer after making their own independent comparison tests. Others tried competitive packers before standardizing on Gar Wood. All discovered the quality difference in the Load-Packer's superior engineering. And all discovered that Gar Wood's nation-wide sales and service organization is the finest in the industry.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Richmond, California

NEW!



SURE CURE for a FAILING SEWER

EVANITE PLASTIC LINERS

Evanite Plastic Pipe Lining is the proved, tested, economical way to make deteriorated sewer lines **better** than new. Leak-tight liners slide into the failing sewer—keep wastes from seeping out and prevent the infiltration of ground water that overtaxes treatment plants.

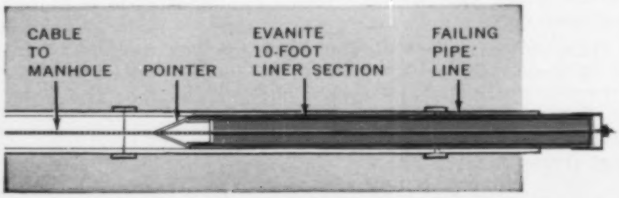
You save the cost of excavating and replacing an entire line. And Evanite Liners are so easy to install, an inexperienced crew can do the job perfectly. Light, 10-foot lengths are easy to handle, easy to join. No special skills are required.

The Evanite Plastic Company will assign its own consultants to your job to provide your crews with basic installation instructions, show them how to save time and materials.

Evanite is the newest advancement in the rehabilitation of leaky, corroded, and defective sewers. Write for complete information and technical data.

GUARANTEED 50 YEARS! Written guarantee available on request.

Even though the lined sewer may be slightly smaller in diameter, its carrying capacity is generally unimpaired, because of the unique hydraulic efficiency of plastic (with the lowest "n" factor of any pipe material), plus the exclusion of infiltration from ground waters.



Evanite PLASTIC COMPANY

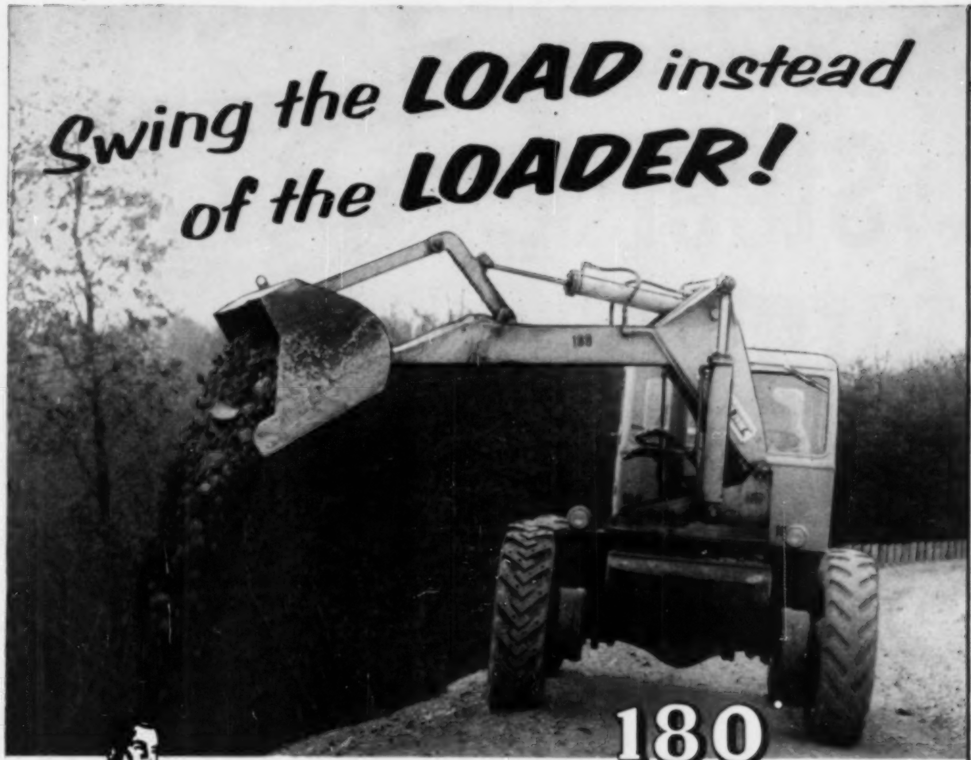
CARROLLTON, OHIO Telephone 68 • LEESBURG, FLORIDA Telephone ST 7-1321

Division of

THE EVANS PIPE COMPANY • UHRICHSVILLE, OHIO

One of the nation's largest manufacturers of face brick, clay pipe, flue lining, wall coping and related construction materials.
More than 50 years of faster, friendlier service.

EVA-361-182A



180 SPEED SWING

ALL-PURPOSE MATERIAL HANDLER

The Pettibone 180° Speed Swing answers every need on your job schedule because it combines the best features of all material handling equipment in *one* machine. This gives you *all-job versatility,* plus exclusive swinging boom performance.

The turning and maneuvering requirements of conventional loaders are now eliminated by the Pettibone Speed Swing because you swing the load instead of the loader! This means *faster, safer, more efficient handling!*

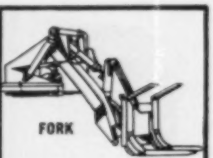
It cuts your time and labor costs. You eliminate the need for extra equipment investment, all of which adds up to a more profitable operation for you!

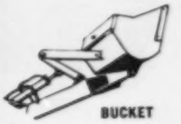
Shown above the Speed Swing is working parallel to the shoulder and dumping material over the bank. This eliminates the possibility of the loader tumbling over the bank and endangering the operator. Shown at right, 10 quickly interchangeable attachments (by changing *only* 3 pins) make the Speed Swing the *most adaptable, most versatile* all-purpose material handler today!

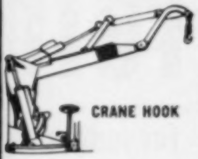
Get the facts on how the Pettibone 180° Speed Swing can reduce your equipment investment, as well as your maintenance costs.

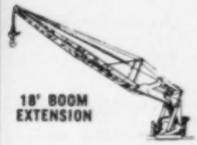
PETTIBONE MULLIKEN CORPORATION

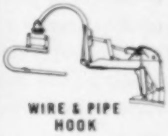
4700 W. DIVISION ST.
CHICAGO 51, ILLINOIS
SPaulding 2-9300

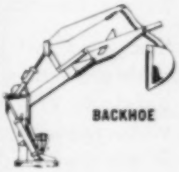

FORK

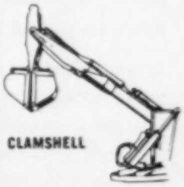

BUCKET

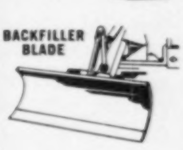

CRANE HOOK

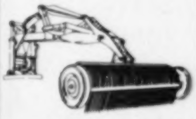

18' BOOM EXTENSION

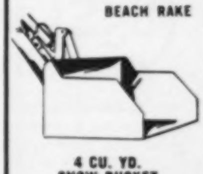

WIRE & PIPE HOOK

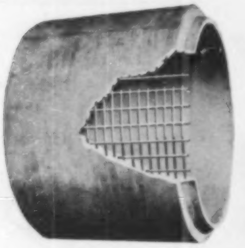

BACKHOE


CLAMSHELL


BACKFILLER BLADE


BEACH RAKE


4 CU. YD. SNOW BUCKET



Steel reinforced

for longer life in storm sewer service!

Concrete pipe reinforced with strong USS American Welded Wire Fabric solves drainage problems.

Albuquerque, like most southwestern cities, is spreading out. You see new construction almost everywhere you look. This photograph shows some of the activity that goes into transforming the wide open countryside into new residential areas. It was taken in the North East Heights development and shows the laying of reinforced concrete pipe for a storm sewer. In this project, approx. 17,000 lineal feet of reinforced concrete storm sewer pipe from 24″ dia. through 72″ dia. was laid.

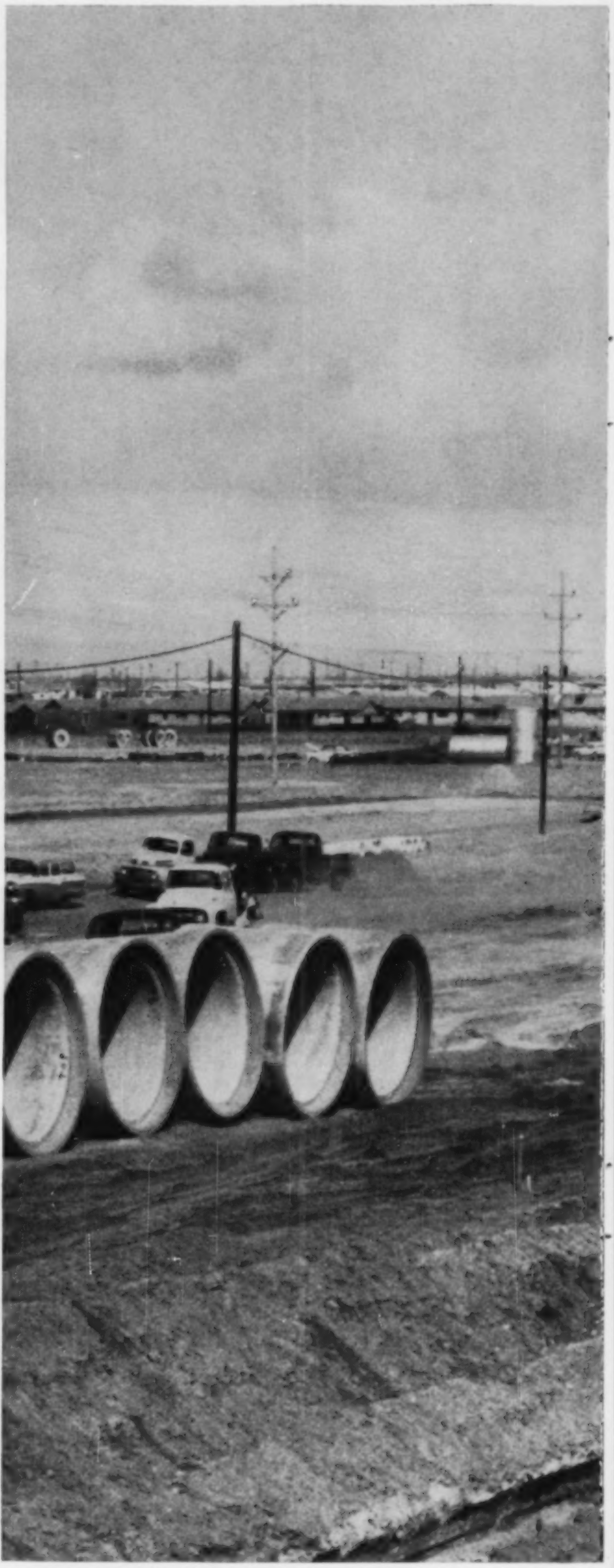
The pipe shown is 72″ pipe, and every foot of it was *steel-reinforced* with USS American Welded Wire Fabric to give it the strength and durability to withstand heavy loads and assure long service life. It was pre-tested to meet the rigid requirements of ASTM Specifications C76-57T, and will withstand loads exceeding 100,000 lbs.

A large number of concrete pipe manufacturers are using USS American Welded Wire Fabric to get greater strength and durability. This quality wire fabric is made on precision machines to the closest of tolerances ±0.003″—with center to center spacings held to ¼″. It is prefabricated from cold-drawn, 60,000 psi min. yield strength wire. All intersections are electrically welded to assure positive mechanical anchorage in the concrete. For more information about USS American Welded Wire Fabric—write American Steel and Wire, Dept. 1195, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

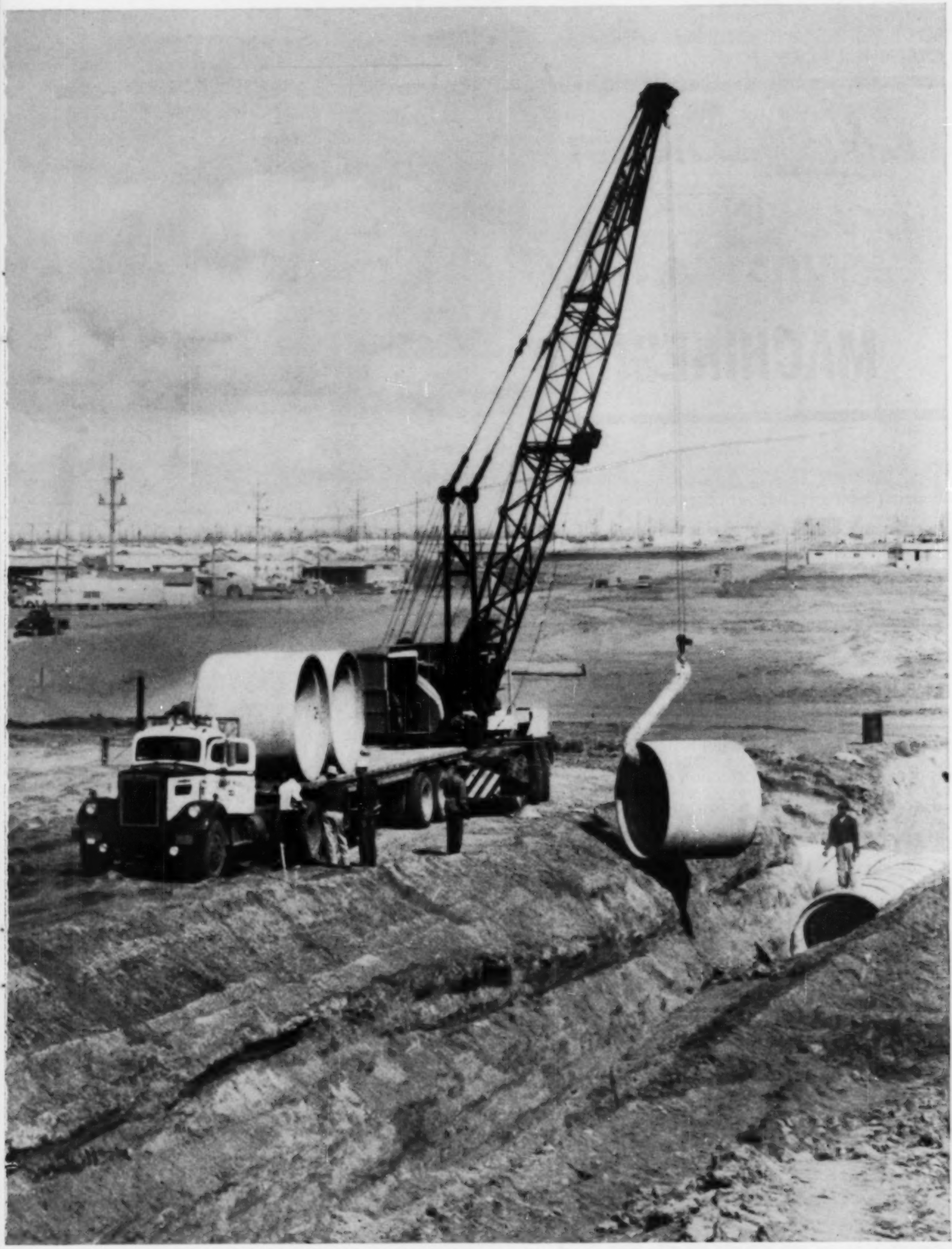
USS and American are registered trademarks

American Steel and Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad



Project: Storm Sewers, North East Heights, City of Albuquerque, N.M. **Engineers:** Gordon Herkenhoff & Associates. **Contractor:** C. R. Davis Contracting Company. **Product:** Reinforced Concrete Pipe ranging in size

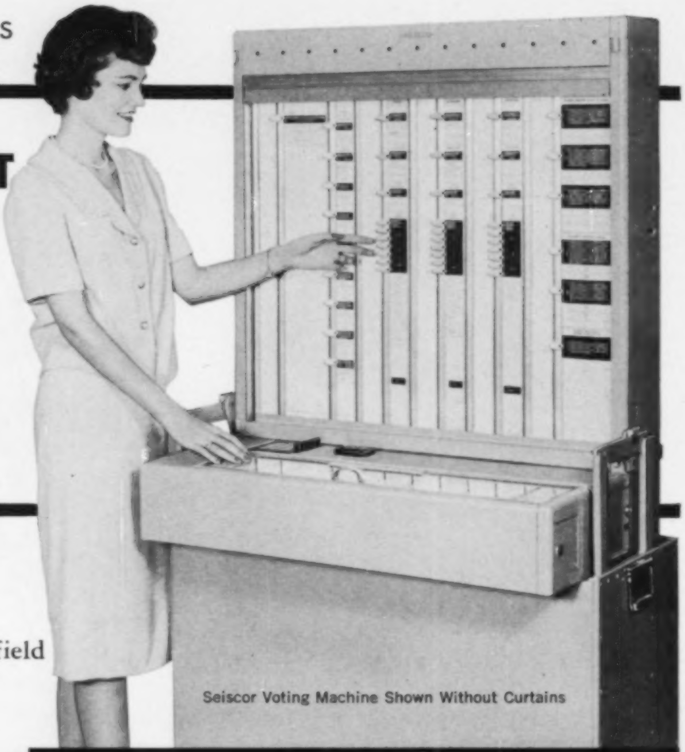


from 24" to 72" dia. Reinforced with USS American Welded Wire Fabric.
Manufacturer: Pipe by American-Marietta Corporation. Reinforcement by American Steel and Wire Division of United States Steel.

This mark tells you a product
is made of modern, dependable Steel.

BOTH VOTERS AND ELECTION OFFICIALS
CAST THEIR VOTES FOR . . .

A *NEW* CONCEPT IN VOTING MACHINES!


Seiscor Voting Machine Shown Without Curtains

Before placing its new voting machines on the market, Seiscor ran a full-scale "field test" in conjunction with the November general election in Tulsa, Oklahoma. The results confirmed everything our engineers had told us: the machines were easier to use, easier to tabulate, easier to move and store, and won the overwhelming approval of voters and election officials alike. Here are just a few of the comments gleaned from the "Voter Opinion Card" survey taken at the time:

"As a worker on the election board, I say 'Wastes no time . . . it's our best find . . .' "
. . . *precinct official*

●

"I am acquainted with all types of voting machines now being used and am convinced this is the best."
. . . *voter*

●

"Voting machines are essential today. This is the best one I've seen. Surely we'll be allowed to have them soon."
. . . *voter*

"Simple and uncomplicated — I like it."
. . . *voter*

●

"I have voted on machines in Pennsylvania and Indiana. This machine is much simpler, more compact and looks a lot nicer. It should pay for itself in a short time."
. . . *voter*

●

"My chief concern was maintaining the secrecy of the ballot. You have protected that."
. . . *voter*

FOR MORE INFORMATION MAIL COUPON **NOW!**

SMALLER ● LIGHTER WEIGHT ● PORTABLE ● CLEAN FUNCTIONAL DESIGN ● LOWER COST ● MORE FLEXIBLE ● EASIER TO STORE ● TESTED IN USE ● GREATER CAPACITY ● VERTICAL BALLOT ARRANGEMENT

SEISCOR MFG. CO.
P. O. BOX 1590 ● TULSA, OKLA.

Gentlemen: I am interested in a voting machine that weighs less, costs less and is easier to handle and supervise. Send information at no obligation to:

NAME________________________

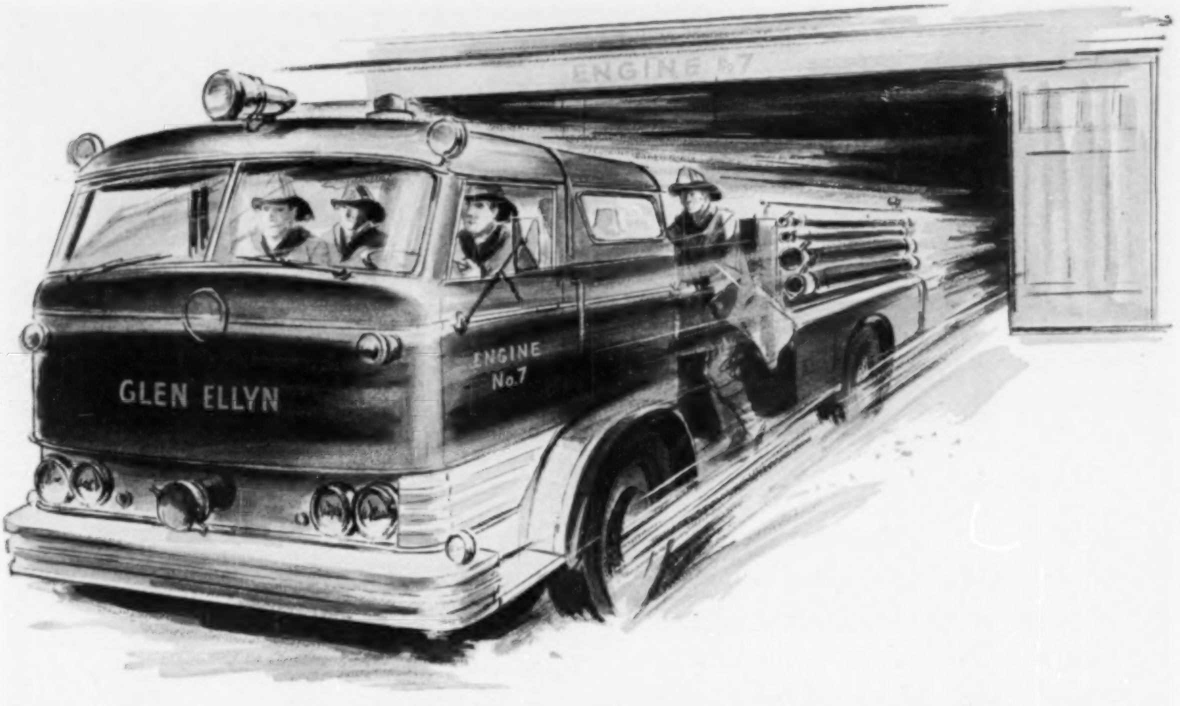
ADDRESS________________ CITY________

CIVIC TITLE OR BUSINESS________________

AC-7 (please print or type)

SEISCOR

A DIVISION OF SEISMOGRAPH SERVICE CORPORATION
BOX 1590 ● TULSA, OKLAHOMA



"Let 'er Roll!"...and She Does...
with Spicer's Turbo-Matic Transmission!

"The Spicer Turbo-Matic Transmission on our new Mack pumper is really paying off for us," says 1st Ass't. Chief R. D. Raffensparger, of the Glen Ellyn (Illinois) Fire Department.

"Valuable minutes are saved because no gear shifting is required. You just step on the gas and go! And it makes for safer driving, too, because the driver can keep both hands on the wheel at all times!"

That's right. With a Spicer Turbo-Matic Transmission, there are only three positions on the shift lever: forward, neutral, and reverse. In the forward position, the Transmission shifts automatically into direct drive when the vehicle reaches cruising speed. The engine is operating at maximum efficiency at all times—there's no lost motion, no lag. So, in addition to saving time, the Turbo-Matic steps up operating economy, too.

Don't buy another piece of fire-fighting equipment until you've had the full story on the many advantages of Spicer's Turbo-Matic Transmission. For complete information write Dana Corporation, Toledo 1, Ohio.

This Mack Model C-85 Pumper, operating for the Glen Ellyn (Illinois) Fire Department, saves precious seconds with its Spicer Turbo-Matic Transmission.

Watch for announcement of the new model 184 Turbo-Matic Transmission—designed specifically for fire-fighting vehicles.

DANA
Spicer

DANA
CORPORATION
Toledo 1, Ohio

Arachne and The Microstrainer

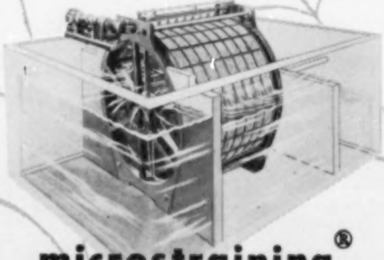
Arachne, the Greek mythological weaver was changed into a spider by Athene her jealous rival for supremacy. Hence the name Arachnida defines the class of animals known as spiders, creatures surpassing all others in the art of spinning and weaving.

Spiders such as aranea diadema, the garden variety, spin webs to trap their prey, biting the victim and rolling it in a silky net. The strands for making such nets and webs are ejected from the body of the spider through about six finger like spinnerets each having a spinning field of 100 or more tubes. The Black Widow, so called because she often kills off father then devours him, spins a thread about 1/5000" in diameter and very tough, in fact it remains so even after boiling. These threads have a tensile strength second only to that of fused quartz and are used as cross hairs for surveying instruments and gun sights.

Female exponents of the weaving art with cannibalistic tendencies may have no place in Microstraining, but the efficient operation of the equipment does rely upon the entrapment in a fabric of multifarious organisms and solids suspended in water. The organisms, animal and vegetable, dead and alive together with organic and inorganic matter are deposited on the inside of a revolving drum covered with wire cloth as the water flows through the apertures of the mesh.

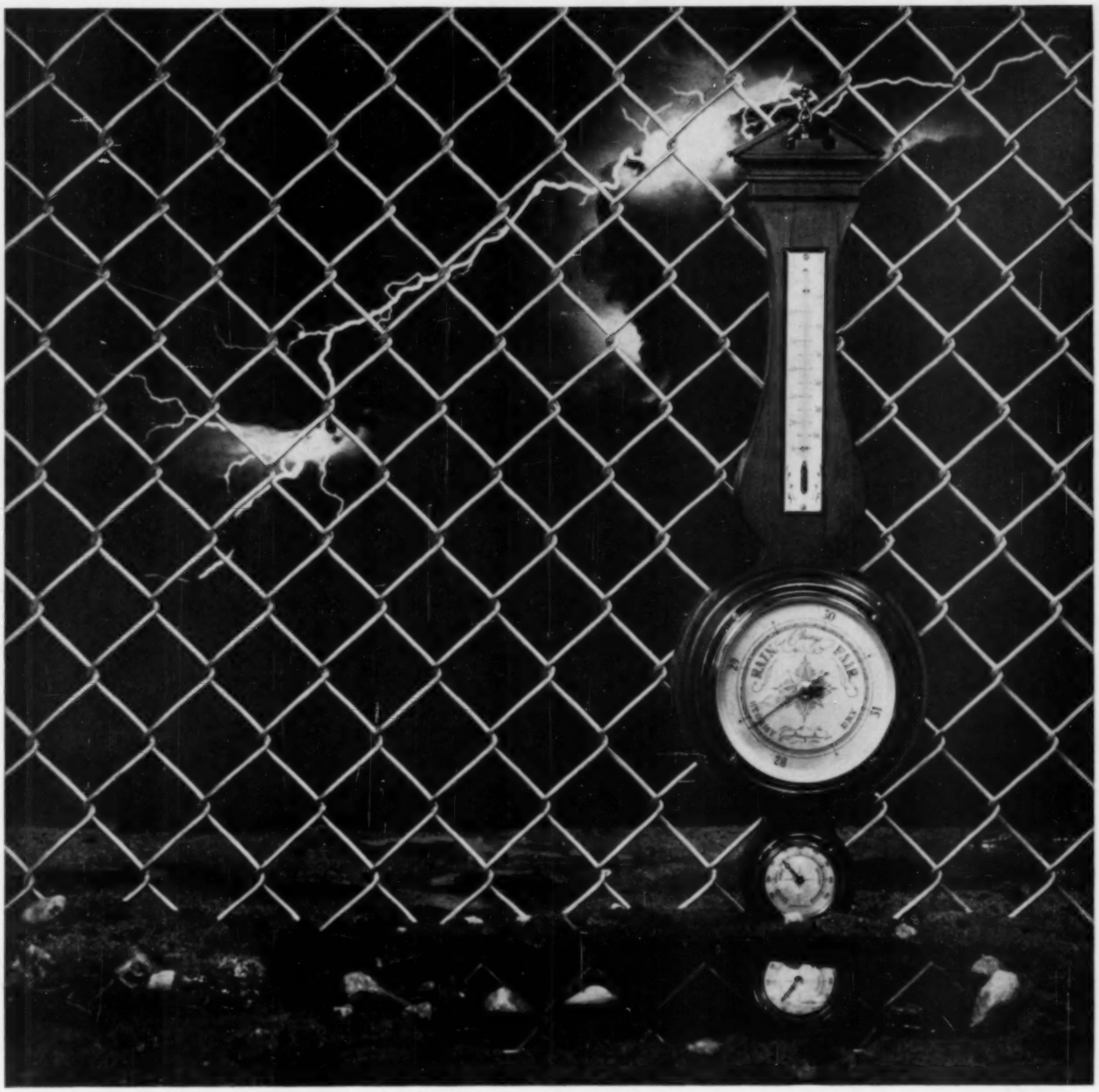
Removals of organisms as high as 90% have been obtained. The manufacture of a cloth to accomplish such effective straining necessitated the development of the finest weaving techniques. To make micro-fabric stainless steel threads from .0016 to .0040 in diameter are woven on a loom into three grades of cloth, Mark O, Mark I and Mark II. Beautiful and intricate as are spiders webs none can approach the fineness of the weave used for micro-fabric with 160,000 apertures 1/1000" across to every square inch. Tough and durable in addition this material is used with success on Glenfield Microstrainers in more than 140 installations all over the world solving many problems by a new approach to water treatment.

For details of the process and installations, write:



microstraining®
U. S. PAT. No. 2462604

GLENFIELD & KENNEDY, INC.
275 HALSTEAD AVENUE • HARRISON, NEW YORK
Telephone-TEnnyson 5-2552



FORECAST: VIOLENT STORMS...BUT

Realock Fence will resist the foulest weather

That's because Realock is made from top grade steel wire, and is completely galvanized, making every foot thoroughly resistant to weather and corrosion. Realock Fence is a one-time investment that requires minimum maintenance.

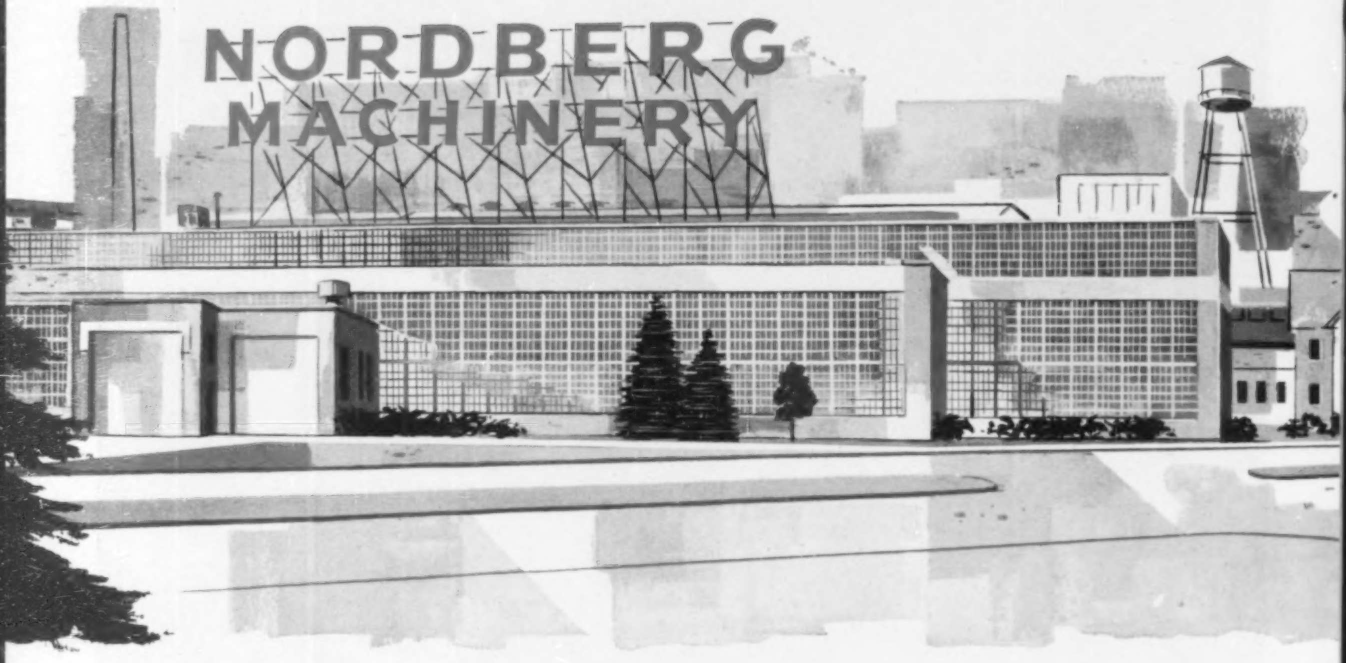
Consider Realock Fence when you want the ultimate in protection. For complete information and a free estimate, contact the nearest CF&I office.

6129

Realock
Fence

CF&I
STEEL
MADE IN U.S.A.

The Colorado Fuel and Iron Corporation
Denver • Oakland • New York
Sales Offices in All Key Cities



This is Where the Power is Built into

NORDBERG DIESEL ENGINES

Thirty years of research and development experience in the heavy machinery field were focused on the design and manufacture of internal combustion engines when, in 1915, Nordberg became the first American manufacturer of large, heavy duty diesels.

From this unique and specialized engine building experience, there have evolved many exclusive engineering achievements. Today, Nordberg builds the largest line of heavy duty diesel engines in the western hemisphere . . . in sizes from 10 to over 12,000 horsepower in a single engine.

NORDBERG MANUFACTURING COMPANY
Milwaukee 1, Wisconsin

NORDBERG MACHINERY

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS
NEW ORLEANS • NEW YORK • PHOENIX • ST. LOUIS • SAN FRANCISCO • TAMPA • WASHINGTON
WICHITA, KANS. • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.

1886-1961
75th
ANNIVERSARY

© 1961, N.M.CO.

P361-R

JULY 1961

The
American City

William Penn would be delighted with . . .

Philadelphia's Long-Range Plans

. . . that preserve what is good from the historic 17th-century past and prepare for a dynamic 21st-century future

By **MITCHELL WINN**
Information Officer
City Planning Commission

Philadelphia's comprehensive plan, which outlines the shape of the city for the next two to four decades, is extraordinary in two respects: first, it places a price tag on the physical improvements proposed (some $3½ billion) and second, it suggests the delineation of the city into sub-units of decreasing size so that each citizen will be provided with different levels of public and private service on a district, community and neighborhood basis in accordance with standards developed and recommended by the Planning Commission. The plan divides the city into ten "districts" of 150,000 to 300,000 people each, which are further subdivided into 56 "communities" of from 25,000 to 50,000 people. The "communities" are also divided into "neighborhoods" of from 5,000 to 15,000 people.

The city's share of the total cost will come to some $921,000,000. Half of the balance of the approximately $3½ billion completion cost will come from state and federal sources. The remainder will be shared by the Board of Public Education and self-supporting city projects.

At the city's present rate of expenditure ($25,000,000 per year), it will take 37 years to complete the plan. The regeneration of the city which the plan proposes is expected to stimulate some $9 billion in private investment, which could greatly accelerate the completion date.

Assuming that the city develops generally according to the plan, the

Typifying Philadelphia's commercial land-use plan, the rejuvenated center-city area brings light and air by means of sunken courts and provides an underground shopping area along with new office space.

Many facets of the city's transit plan encourage the use of rail facilities rather than cars which would clog the streets

Philadelphian of 1980 will be one of 2,250,000 citizens, 248,000 more than were counted in the 1960 census. He and his fellow citizens will be living on 41,000 residential acres representing 48% of all the land use in Philadelphia.

His home will be one of the 660,000 dwelling units. Of these, the proportion of apartment units will have increased from 22% to 28% and row houses will have decreased from 57% to 48%. Also, he will have more living space as the number of families per acre will decrease from 27 to 25 and his environment will be characterized by more clearly defined and separated land uses. Assessed valuation will increase by an estimated 104% to 7.6 billion dollars (in terms of 1956 purchasing power).

By 1980, there will be 1,214,000 in Philadelphia, an increase of 249,000 over the 1956 figure, and productivity per worker should have increased from the 1956 level of $7,319 to $12,000 by the 1980 date. Per-capita income probably will be approximately $3,462 (in 1958 dollars) —an increase of $1,000 over the 1956 figure. Output of goods and services can expect to rise 107% to $14.6 billion.

More than 3,000 acres of land presently in residential use will be redeveloped for other land uses, primarily industry and commerce. More than 1,000 acres of land presently in non-residential use will be redeveloped for residential purposes. Almost all of the existing land proposed for different uses is presently in the "blighted" category.

By 1980, 4,000 acres of land that were vacant in 1960 will have been developed for new housing. This will be augmented by the 1,000 acres presently in other uses which will be redeveloped for residential purposes. In addition, major reconstruction (meaning clearance of 33% or more of the dwelling units) is proposed for 5½ square miles of the city's residential areas, while limited reconstruction (clearance of 10% to 33% of the dwelling units) is proposed for another 15 square miles of the city's residential area.

Industry to Stay

During the next 20 years, the average number of employees per net acre devoted to manufacturing and related activities will decrease from 65 to 45 (excluding land devoted to utility, port, and airport installations and railroad terminal facilities). This decrease will reflect trends toward one-floor plans, more generous provision for parking, loading and landscaping, plus the increasing factor of automation.

These trends have brought considerable pressure on industry to seek new locations and many of them have moved outside the city. In order to remedy this situation, the plan for industry proposes:

1. Clear definition of areas that are to remain industrial.

2. Reservation for industrial use of certain presently vacant areas.

3. Redevelopment for industrial use of certain areas presently in other uses. In addition to providing space for new and existing plants, land also will be provided for off-street parking and loading to meet requirements for lower-density industrial activities.

In all, industry will have available approximately 18,000 net acres or 25% of the total land use in Philadelphia.

Industrial Zones

Industrially, the city is divided into five zones: Center City, primarily concerned with intensive manufacturing and wholesaling; the Inner Zone, related closely to Center City, containing many of the city service industries; the Outer Zone, containing many and varied industries with high productivity; the Waterfront, for industries requiring rail and water access or cooling water; and the Far Northeast, where "industrial parks" are being established for industries with large space requirements.

The plan for commerce carries forward the basic concept of different levels of service related to the pattern of "districts, communities and neighborhoods" proposed in the plans for residence and community facilities. For example, an intermediate shopping center would be part of the "community" complex that could also include a branch library and a health clinic.

Most of the scattered or strip commercial land-uses that are currently in evidence will be replaced by 1980 by commercial "centers" whose size will determine the variety of goods and services they offer, and whose locations will provide maximum accessibility to the areas they serve. The total amount of city land in commercial use will remain at approximately 5% (a little more than 4,000 acres) although commercial activities will be concentrated to a greater degree than they are at present.

In addition to the special and dominant commercial area of Center City, the plan proposes five large regional (district) shopping centers, 21 intermediate (community) centers, 169 local (neighborhood) centers and 91 free-standing commercial areas.

Center City will continue to be

the most important section of the city from an economical point of view and will function as the regional "capital" for the 6,000,000 people living in and around Philadelphia. Office activities will increase and the retailing function dominated by the major department stores will be reinforced. Downtown employment will increase from 375,000 to 416,000 by 1980.

Each regional shopping center will be designed to serve a population of more than 125,000 persons within a 25-minute-travel-time trade area and will include department stores as the major tenants. These shopping facilities will be major components in the "district centers" proposed in the plans for residence and community facilities. None of them will be close to Center City.

Intermediate shopping centers will serve from 40,000 to 120,000 people each and may include junior department stores as the major tenants. They will be designed to provide weekly shopping necessities and specialized local service primarily to those living within fifteen minutes travel time. Eighteen of the 21 sites proposed already exist.

Local shopping centers will serve a population of 5,000 to 20,000 within a five-minute travel-time trade area. Characterized by a supermarket as a major tenant, they are designed primarily to serve daily and weekly shopping needs.

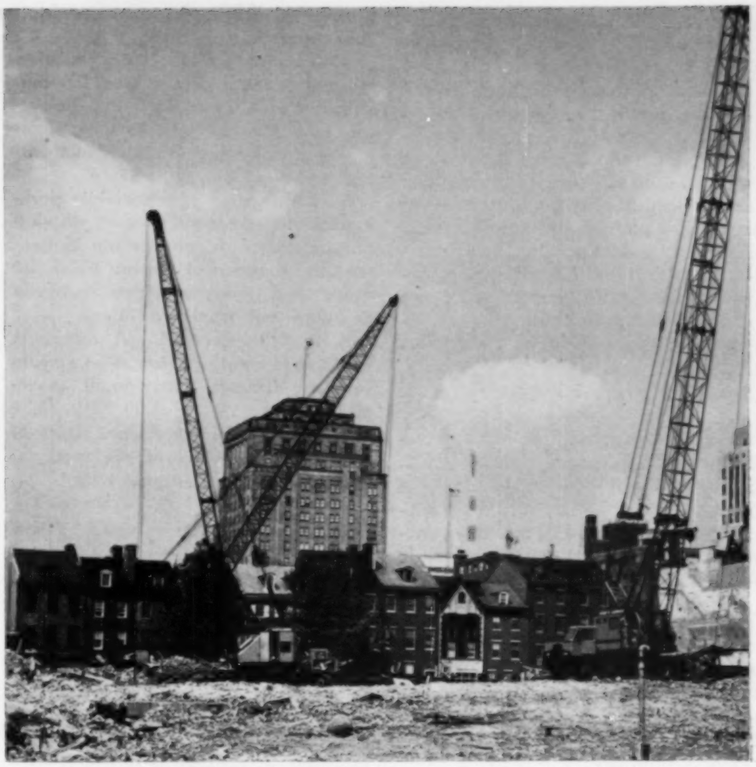
Convenience-centers patronized by pedestrians will be located in the densely populated five-mile area surrounding City Hall. All other centers will be auto-oriented, and a substantial increase in off-street parking and loading facilities is proposed for them.

Community Facilities

The recreation plan proposes one playground for each 11,000 to 12,000 people. Therefore, each "neighborhood" might be expected to contain a playground which might also be its focal point. The plan indicates that Philadelphia will need 207 playgrounds by 1980, 94 more than exist today. Joint development of playgrounds and elementary schools wherever possible is recommended.

Playfields will be established at the rate of one for each five or six playgrounds and 14 of these facilities will be added to the current inventory of 26.

In addition to a large number of local parks to be located in "neighborhoods," the plan proposes 20 district parks, an increase of nine. This includes two new regional parks which are to be maintained as nat-



As an extra dividend in the residential-treatment plan, old colonial-era homes will be rehabilitated in the Washington Square East redevelopment project.

By dividing the city into sub-units of decreasing size, the plan encourages neighborhood cohesion; small parks, such as this, will form focal points.

ural areas. Total park acreage exclusive of local parks will be almost 10,000 acres, an increase of about one third. A number of special recreation facilities such as golf courses and marinas also are proposed.

The plan for libraries also shows the relationship of a community facility to different population-level areas. The plan suggests that branch libraries be located in "communities" and regional libraries be located in "districts." Accordingly, the plan proposes 41 "community" libraries (28 already exist), six "district" libraries (none now exist), plus three special libraries (all of which exist).

The plan proposes ten health centers of which seven already exist. Serving 200,000 to 250,000 people each, they will be supported by satellite clinics located in schools, community centers and similar strategic locations.

Transportation

A combination of transportating systems designed to move people more quickly and comfortably and goods more expeditiously is proposed in the plan for transportation. Its major points are:

1. **The construction of 83 additional miles of radial and circumferential expressways.**
2. **The construction of ten additional miles of subway and the reconstruction of eight existing miles.**
3. **The reconstruction of large sections of the proposed 500-mile arterial-street system.**
4. **Connection of the major existing commuter rail line facilities by construction of a downtown loop linking the Pennsylvania and Reading Railroads, thereby eliminating downtown stub-end terminals.**
5. **Construction of automobile parking facilities designed to meet growing parking demands, particularly in Center City, commercial centers, industrial areas and transfer points between highways and transit facilities.**
6. **Improvement of rail and port facilities to meet growing requirements for long-distance heavy-goods movement.**
7. **Development of airport improvements to meet increased air-travel demands including helicopter travel.**

For Center City, the plan proposes service primarily by rapid transit and commuter rail lines. For the intermediate area within five miles of the Center, bus and trolley service will predominate, while for the outlying areas, the private automobile will be the prime mover. Because the many home-to-work trips are "interzonal" the use of a combination of facilities is foreseen with special facilities, such as parking lots, recommended for transfer points.

At International Airport, facilities such as hangars, runways and terminal space will be added or improved to keep pace with the estimated 1975 passenger load of six to ten million persons per year (compared to the two million accommodated in 1959). Heliports also are proposed for the city's two airports, with additional heliports and helistops to be built at other strategic locations.

What Comes First?

The orderly completion of the plan recognizes that some aspects have higher priority than others. For example, the success of the Industrial Plan will require that many of the transportation proposals will have been carried out or will be proceeding concurrently with industry-oriented projects.

Similarly, improvements to the city's economic base cannot proceed at the expense of a deteriorating residential environment. Therefore, needed urban-renewal projects also will have high priority.

Related to the consideration of residential environment is the matter of recreation facilities. The great pressures which will bring about the development of all currently available open land within a very few years time makes advance acquisition of recreation land a high priority consideration.

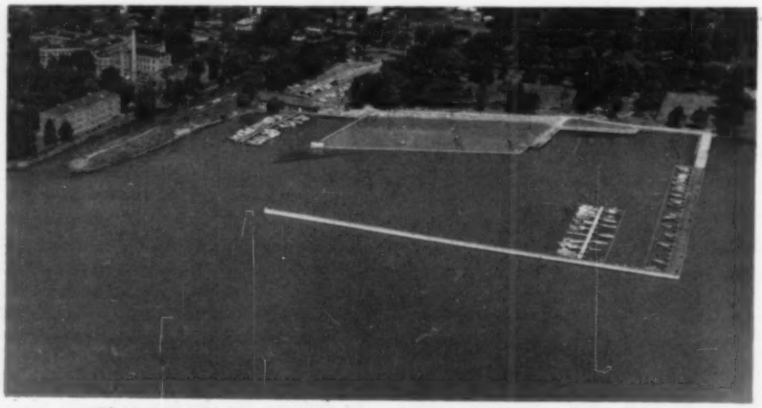
Philadelphia's vigorous Mayor Richardson Dilworth and the City Council have shown great interest in the plan and it is already becoming a guide for many municipal decisions regarding land use and capital improvement programming in the city. ◄◄

First Stage of Marina Completed

Grosse Pointe Park, Mich., is proudly preparing for the first full season of activity at its new marina. Slips for 24 boats up to 35 feet in length and for an additional 20 shorter craft adjoin the newly-completed steel and concrete seawall in Lake St. Clair, just north of Detroit. Only Grosse Pointe Park residents may use the new facility which charges rates equal to those of commercial yards in the area.

A strip of filled land on the boundary line between the two cities holds the key to future marina development. If bi-city arrangements will permit, more marina construction will extend south to include this area. A small-boat launching area will supplement the slips for those who take their boats home at night.

The new seawall now aids in protecting the swimming pool with its chlorination plant which nestles in this cove, providing still another type of recreation for Grosse Pointe Park residents. Prior to the marina seawall construction, a rock-ballasted wooden crib protected the pool and other harbor facilities. Five years ago a storm with its attendant high water practically destroyed the crib protection. The marina seawall now shields the pool as well as providing the protection necessary for the newly-constructed slips. ◄◄



The new marina provides a welcome addition to the harbor facilities.

Las Vegas provides weekly street sweeping service to all residential areas and more frequent cleaning in the downtown sections.

←

Although some flushing is done, it is curtailed because of the high price and scarcity of water.

→

"White wings" work every day in the casino area. Carelessness on the part of tourists adds to the litter problem in this area.

Street Cleaning In a 24-Hour-a-Day City

Las Vegas, Nev., overcomes unusual problems and sweeps 50% more street mileage with no increase in equipment or personnel

By **R. P. SAUER**
Director of Public Works

Las Vegas, which likes to be known as the entertainment capitol of the world, is literally a 24-hour-a-day city. This presents problems in street-sanitation work which are probably peculiar to this city alone. Three additional problems affecting street cleaning consist of:

- **Vigorous population growth—from 44,795 (special U. S. census) in April 1955 to 70,610 in April 1961.**
- **A 49.71% increase in paved-street mileage—from 188.12 miles as of January 1, 1955 to 281.65 miles as of January 1, 1961.**
- **Desert weather conditions including very dry weather and low humidity with scarce and expensive water; above-normal dust because of rapid subdivision construction in virgin territory; and infrequent but damaging cloud bursts and flash floods that bring tremendous amounts of water and silt into the city.**

While we give top priority to the downtown or casino area as far as frequency is concerned, we by no means neglect the residential sections. The latter, except for the original townsite, are swept once a week. We sweep the casino area five days a week and the commercial and original townsite areas from two to three times a week.

The casino area also receives the daily attention of "white wings." We have three men for this task. All three work together on Monday with only two doing hand sweeping work the other six days.

Flushing also forms a part of the program. Our schedule calls for flushing the original townsite every other week; commercial areas occasionally, with some areas bordering the casino area every other week; and the downtown casino area five times a week.

Late Litterbugs

In Las Vegas, traffic is heavy at all times, even late at night, and tourists tend to disregard trash receptacles, thereby increasing the amount of litter normally expected. We experienced trouble in clearing the streets of parked cars to do a more thorough cleaning job. We now post signs prohibiting parking between certain hours (4:00 a.m. to 8:00 a.m.) in the area of the original townsite and this has proved successful. This practice may be extended to other business sections of the city.

Machines in operation at present consist of two Austin-Western, Model 40's; two Mobil Model MS units; and two Wayne Model 460's. One Wayne unit operates two shifts and we use one Austin-Western as a spare. Manpower consists of one operator for each machine on each shift and one man fabricating and maintaining brooms.

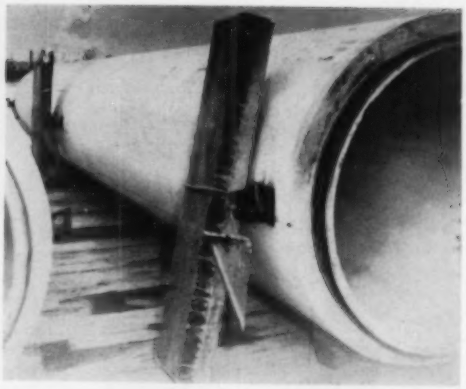
Operation

The machines total 25 to 35 miles per shift, with 85% to 90% as "sweeping miles." We found wire brooms to be more satisfactory than hickory or palmyra, for they run between 2,000 and 2,750 miles per broom as compared to 275 to 300 miles.

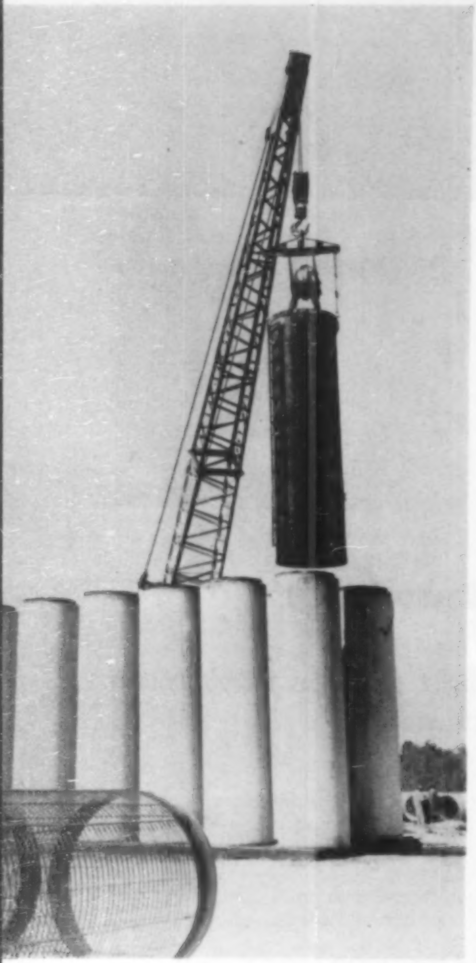
Material and labor for a wire broom runs about $225, bringing the per mile cost down to 8 to 11 cents. While material and labor for the hickory and palmyra broom comes to only $60, the per-mile cost averages between 20 and 30 cents. Thus, we are realizing much more service at less cost from the wire brooms. We use Danline wire brush segments made by the Newark Brush Company. We find them quick and easy to assemble on the shaft of the main broom.

All street flushing is handled by a single 1,500-gallon Etnyre unit mounted on an International chassis.

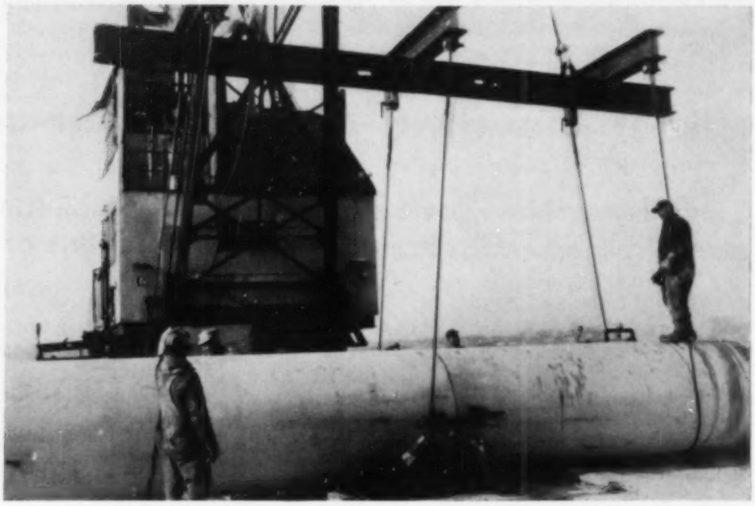
We feel that our present street-sanitation standards are exceptionally high and are doing everything to maintain these standards. ◄◄



The composite joint supports and the wedge blocks will anchor the pipe in the trench.



A crane strips the forms from the 16-foot sections of welded-wire fabric-reinforced concrete pipe.



An I-beam "strong back" provides positive control of the double sections.

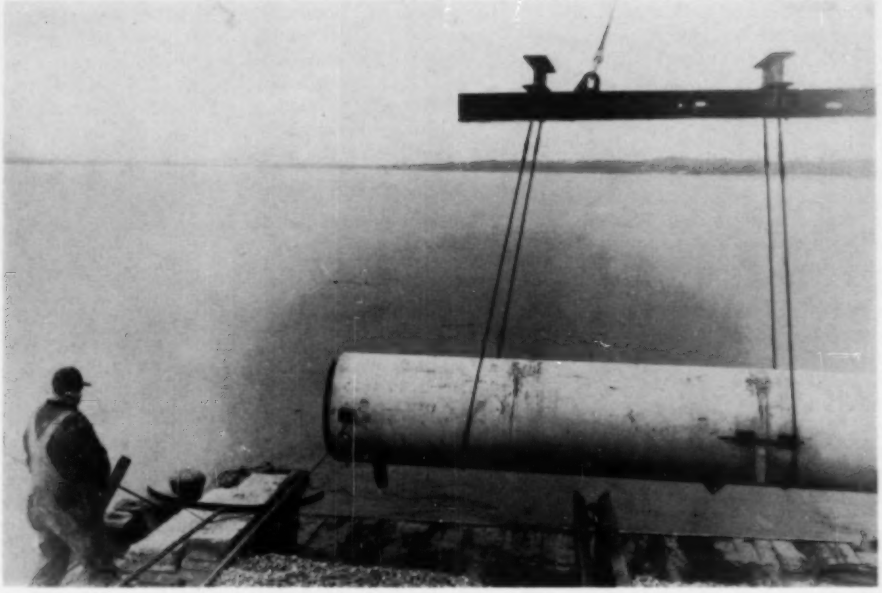
Underwater Line Feeds a Dozen Towns

The solution of unusual construction problems aids water-critical area

A tough, ½-mile-long pipe-laying job under the Niagara River provided one of the essential links in the development of a water supply for 12 villages in Niagara County, N. Y. In addition, when this supply is completed, the Niagara County Water District will furnish water to several villages in adjacent Orleans and Erie Counties.

The Niagara River, which joins Lake Erie to Lake Ontario with its northerly flow, will supply from its strong west branch 12 mgd for water-starved villages in western New York State through 65 miles of distribution lines. Four Johnston Mix-Flow pumps, each with a 6.4-mgd capacity, will force the water through the new reinforced concrete line across Grand Island and under the east branch of the river to a purification plant now under construction in Niagara County.

Laying the 2,800-foot pipeline



Lugs and bolts fasten the joints together.

across the bottom of the east branch of the Niagara River proved particularly difficult and time consuming for three major reasons: the current in excess of 8 mph at the site, the 24- to 30-foot depth of the river and the rock-like bottom which impeded the cutting of the underwater pipe trench. General contractor W. L. Hailey called upon the maritime L. A. Wells Construction Co. to complete the underwater portion of the work.

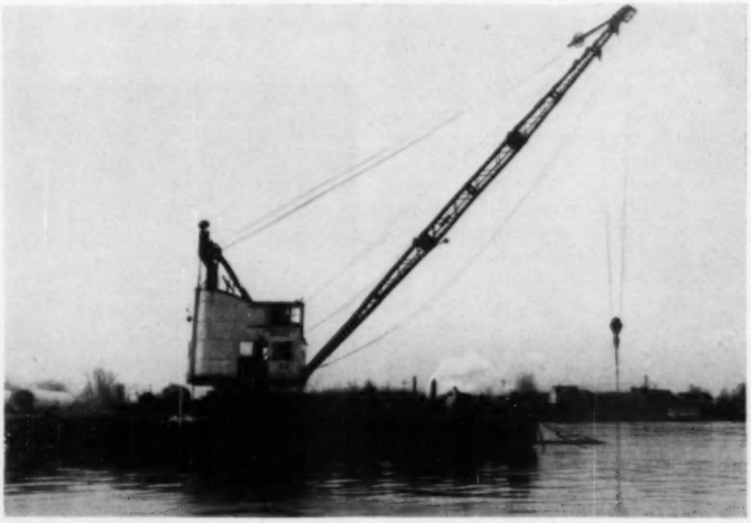
The contractor began operations by placing a target on each shore to determine the alignment of the crossing. A dredge with a 5-yard, steam-operated shovel traveled along the line of the pipe, excavating a 20-foot-wide trench from 7 to 16 feet deep. As the cut advanced, the dredge engines propelled the unit forward. Cables steadied the dredge on line. Shore elevations determined the hourly river water levels and a barge-man measured downward from the water surface to ascertain the depth of cut.

Excavated Material

The solidly compacted excavated material came out of the trench almost like rock. The upward movement through the river water did not dissipate it. Two five-man crews dredged 16 hours a day to deposit the excavated material downstream to avoid silting the trench. At times they worked under floodlamps, to stay several hundred feet ahead of the pipe layers. A McMeillar 70-ton, steam-operated crane laid the pipe from atop still another barge, located on the upstream side of the trench to prevent the current from sweeping men or materials into or under the barge. Because the work took place five miles above Niagara Falls, no danger existed from that hazard. Four anchor lines guided the barge along the line of the ditch.

The 16-foot sections of the welded-wire fabric reinforced concrete pipe, 42 inches in diameter, reduced the number of joints made underwater. All joints consisted of steel bell and spigot joint rings, welded to the inner layer of pipe reinforcing, and connected by O-ring rubber gaskets to resist the proposed 45-psi internal hydrostatic pressure. The Rochester plant of American Marietta produced this 4,500-psi pipe, curing it with live steam for three days and aging it an additional seven days in the yard before delivery to the job.

An eight-man pipe-laying crew worked 12 hours per day to install the line, interrupting the job only when strong winds or dense fog interfered. They joined two sections together on the bank to obtain 32-



The barge-mounted McMeillar crane delivers a section of pipe to the diver.

foot lengths and laid four or five of these double sections during a typical working day. Steel anchors, embedded in the pipe when cast, formed the base for a lug and bolt arrangement to secure the joints.

Before sending the double pipe sections underwater to the diver for placing, the barge men tied composite concrete-wood blocks and triangular wooden chocks to the lug and bolt fittings. The composite blocks, 4.5 feet long, one foot wide and five inches thick (two inches of concrete and three inches of wood) supported every joint of the pipe line. The triangular chocks were wedged between the pipe and wooden base block to hold the pipe in place. Because they will be continuously wet, the wooden members will never rot.

A "strong back," a heavy 20-foot long I-beam with three sets of smaller I-beam arms, then swung the double pipe section over the end of the barge by means of cables attached to the arms. The diver communicated to the crane operator by telephone, instructing him when to stop lowering the pipe. He then untied the base blocks from the cable and placed them in the ditch under the joint locations. The operator then lowered the pipe until it was level with the section placed previously. The lug and bolt connection at the newly formed joint held it loosely together while the pipe eased into position on the blocks.

Checking Grade

At the surface the foreman took his position on a float directly over the pipe to check grade and alignment by means of a pole with a semicircular end which the diver placed over the top of the pipe. If necessary, the crane operator then lifted the pipe so the diver could add extra base blocks to raise the line to grade.

Once in position, the pipe required wedges for rigidity. The diver untied the triangular chocks from the line and air hammered them into position. He then tightened the lug and bolt connections to pull the joint tight, the pipe meanwhile sliding the short distance over the wet chocks with no difficulty. A temporary bulkhead to prevent silt and debris from entering the line completed the last double-section installation of the day.

The contractor placed two other pipelines in the trench before backfilling. Wash water from the treatment plant required a 36-inch diameter reinforced concrete pipe outlet, extending 600 feet from the east shore. The third installation was a 16-inch steel pipe to transfer treated water westerly across the stream to Grand Island. After placing ten sections (320 feet) of the 42-inch diameter raw-water line in two or three days, the contractor spent one day laying the smaller steel pipe the same distance. The concrete wastewater line required approximately four days to complete.

Washed slag, restricted to sizes between ½ and 1 inch, backfilled the entire width of the trench to the springline level of the 42-inch pipe, To fill the upper portion of the trench, the barge shovel returned and replaced the previously excavated material.

To relieve certain villages that are critically short of water, the Water District is already putting part of its 65-mile distribution system to use by buying water from the city of Niagara Falls. When the new treatment plant is complete, it will supply all the water needed by these villages. ◄◄

Motor Equipment In Oklahoma City

Although our Oklahoma City Municipal Garage does not "rent" equipment to the various other departments, we do keep a complete record on each unit of the fuel consumed and cost of repairs and services. Each month a report showing these charges is furnished to the city manager, the city auditor, and the department heads so they may evaluate the work being done with the equipment assigned to the various departments. Our charges cover the entire cost of operating the Municipal Garage with the exception of depreciation on the motor equipment.

We would like to install a rental system with a depreciation charge to be put on a revolving replacement fund but cannot do so under our present city charter. All we need in order to set up a rental charge is to add a depreciation charge to our present charges and a change in our city charter to allow us to maintain a "revolving replacement fund."

Servicing

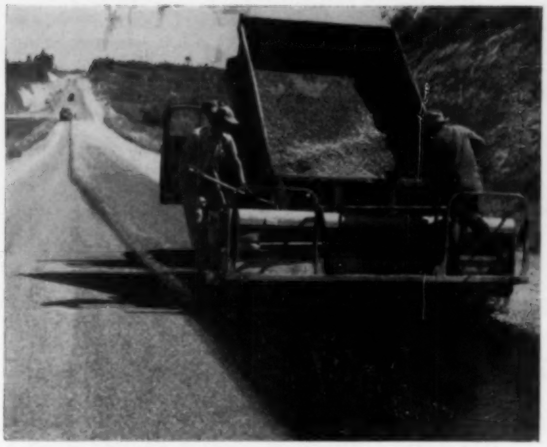
We service and maintain 1,171 units of motor equipment. This equipment includes tractors, cranes, motor graders, compressors, and other heavy and light industrial equipment.

We do all our own repair work including motor overhauls, wheel alignment, welding, body repairs, painting. We do all the servicing of our equipment which includes fueling, lubricating, tire repairs, washing, and service calls.

We have 11½ acres at our main location where we do all our major repairs. We maintain a division at a downtown location for fueling and making minor repairs to passenger cars and inspectors' pickups and we also have divisions at our City Lake and City Airport for fueling and minor repairs to equipment stationed at these locations.

W. J. Booth
Superintendent of Motor Equipment
Oklahoma City, Okla.

A portion of the parking area at the car pool.



The fast-setting emulsion requires teamwork; here the distributor prepares to make another run as the gravel truck ends its covering of the newly placed emulsion.

Cationic Bitumuls seal coating gives new life to the many miles of Tacoma streets surfaced only with a light bituminous treatment. This undeveloped area is now developing rapidly.

New Type of Seal Coating

. . . uses electrostatic attraction to produce a superior roadway surface

By **MYRON D. CALKINS**
City Engineer
Tacoma, Wash.

A little electricity in the right place means better streets for Tacoma citizens. It's all tied up with our seal-coating program and the materials used. A new material, RS-K Cationic Bitumuls, supplied by the American Bitumuls & Asphalt Co., appears to be the answer to our sealing problem. This cationic material has a positive charge and an affinity for negatively charged crushed gravels. This produces a better coating action of the crushed-rock cover-stone and distinctly better rock retention to the old surface.

Tacoma has about 610 miles of streets. Of these, some 40% have permanent surfaces such as cobblestones, brick, portland cement and sheet asphalt. The balance are surfaced with either gravel or light bituminous treatment.

To maintain the older sheet-asphalt streets and those having a light bituminous treatment, crews provide patching where needed and cover them with an RC-4 seal coat. We obtained good seal coats where we could control or detour traffic sufficiently and had good weather. Where we could not control traffic or when weather became unfavorable, pick-up or whip-off of the cover aggregate occurred, resulting in slick or bleeding surfaces depending upon the season of the year.

Advantages of the RS-K asphalt emulsion include better rock retention and extremely rapid setting characteristics. This combination results in less whip-off of the cover material and eliminates practically all bleeding and consequent sanding. On several occasions rain showers occurred within two or three hours after the seal coat was laid. This had no effect on the seal and did not result in oil floating to the surface as had been our experience with cutback asphalt seals.

Fast Setting

The fast setting action of the RS-K asphalt emulsion requires teamwork in its application. We use approximately one-third of a gallon per square yard, followed by an application of about 30 pounds of ⅝-to ¼-inch crushed cover stone per square yard on the streets having only a light bituminous surface. For sealing the badly cracked sheet asphalt surfaces, a ⅜-inch to No. 10 cover stone is used.

Rapid covering of the emulsion is essential for a good job and the temperature upon application should remain between 130 and 140 degrees Fahrenheit. In our program we applied no emulsion until sufficient cover aggregate was on hand for immediate application.

Application

We apply the asphalt emulsion one strip at a time—about 400 feet long. This is covered immediately with damp cover stone followed by a pneumatic-tired roller. The second shot of emulsion parallels the first and overlaps it slightly to insure coverage at the meet line. We continue this process down the street in about 400-foot increments to cover the full width of the street rather than cover only part of the street for long distances. Our crews sealed about 20 miles of light bituminous arterial streets in this manner during the 1959 season.

Following the same procedure on the old and badly cracked sheet asphalt streets gives us a quiet-riding, non-skid surface that is easy to clean with flusher and sweeper.

One winter's wear on this type of seal coat showed that when properly applied, the new cationic RS-K emulsion provides an almost perfect surface seal. We feel this is a definite step forward in our street maintenance methods for the types of surfacing in Tacoma. ◄◄

Saskatoon's residential incinerator program not only helps the city but, by putting disposal within the home (above), relieves the housewife of a distasteful task (below).

Saskatoon, Saskatchewan, Canada, takes steps to reduce its garbage collection and disposal costs by adopting . . .

A Residential Incineration Program

By **J. D. McASKILL**, City Commissioner

We are looking to the home automatic gas incinerator to cut garbage collection and disposal costs, and early results of our cooperative program indicate we are on the right track.

Garbage collection and disposal costs represent a sizeable portion of any municipality's annual operating budget. Until recent years Saskatoon operated its own central incinerator. Plant obsolescence forced us to decide whether we should build a new plant or adopt the sanitary landfill method. We chose the latter but this still did not solve the collection problem. In fact, costs went up because of the longer haul. Also, there remained the problem of adequate fill sites and the continuing increase in garbage and combustible refuse volume. A survey showed that waste-removal costs for the city increased 165% in ten years while our population increased only 68.8% to about 75,000 people during the same period.

The answer to this problem came in the form of a new idea for the disposal of residential garbage and trash. In cooperation with the Saskatchewan Power Corp., city officials developed and put into operation residential incineration.

Numerous meetings and study by various city officials and representatives of the Saskatchewan Power Corporation resulted in a basic program that was adopted by the City Council in May 1959. The program provided that:

- **The city would not collect wet garbage in five new subdivisions under development and that this policy would be continued as subsequent major subdivisions develop.**
- **Non-combustibles would be picked up in these areas on a four- or five-week basis.**
- **To help the home owners in these subdivisions dispose of combustible refuse, the city would enter into an arrangement with the Saskatchewan Power Corp. for the installation of smokeless and odorless home incinerators.**

Investigation showed that these home units could be installed for about $110. Help for the home owner by the city consisted of a $10 yearly tax rebate for five years to compensate for the reduced frequency of refuse collection. The home owner could pay the balance of about $60 by paying a $1 monthly surcharge on the gas bill. He could also pay cash at the time of installation or any time thereafter. No interest or carrying charges were made.

Not Obligatory

The householder was not obligated to purchase the unit through the power company and could obtain an approved unit elsewhere and still benefit from the tax rebate. Also, homeowners in these new subdivisions not installing incinerators also received the tax rebate, but they had to dispose of their own combustible refuse. In this connection, we do not consider garbage grinders as an alternate, since they do not dispose of all combustible material.

To encourage wider use of the automatic gas incinerators, the power company extended the $1-a-month financing privilege to home owners in built-up areas, requiring them to pay $50 down. However, if sufficient numbers in any given area were to install the units so that weekly wet garbage could be eliminated, they would then become eligible for the five-year tax credit of $10 yearly.

In apartment blocks where one garbage collection covers several families, we make only one tax concession. Multiple housing with separate and individual heating units qualify for a tax concession on each unit, as well as where individual collections are made.

The program started fast, with over 200 applications received in the first few weeks, followed by a steady rate of about 40 per week. Installation began in July, with the first unit installed under the plan placed in Mayor Buckwold's home. All this activity preceded the launching of a major publicity program. Regarding installation, the city awarded a contract to a local contractor to install all units purchased through the program. In several other cities having similar programs, the local plumbing and heating contractors adopted a standard installation price. This method may be adopted in Saskatoon when the present contract expires.

Regarding promotion, the city handles all publicity as it pertains to the operation of the plan and was responsible for initiating it. However, the power company does some advertising as to the advantages of home incineration and also serves as a financier.

Two big questions usually arise with this type of program. What do the people think of the idea? How much does it cost to operate a home incinerator? The accompanying table shows the results of a survey (October 1959) of 66 home owners who reported on their use of, and reaction to, the incinerators.

Regarding cost, tests conducted among five families in Regina from November 25, 1959 to January 19, 1960 showed a cost per month from 86 cents to $1.19, with an average of $1.06 and an average gas consumption of 1,968 cubic feet per month. A similar test conducted with six families in Yorkton from February 1 to April 5, 1960, showed a monthly range of 61 cents to $1.67 and an average of $1.04. Average gas consumption per month was 1,930 cubic feet. Gas costs were 54 cents per 1,000 cubic feet.

Minor Problems

Since the program was new, we did expect some problems but these turned out to be minor. Generally speaking, customer reception has been most favorable based on surveys made by the power company as well as an independent body. We did receive some complaints about the efficiency of the units themselves and also the adequacy of a four-week collection schedule. However, such complaints are definitely in the minority and the over-all program has proved to be successful.

As of March 12, 1961, 739 incinerators were installed in those areas where we collect garbage only once every four weeks. In addition, 365 homeowners living in areas where we maintain weekly garbage collection also installed incinerators. All are Majestic units which the power company purchased for the program on a bid basis.

All homes in the area receiving garbage collection once every four weeks have not installed the units and we are receiving some complaints about people burning garbage outside. We do have legislative power to regulate and control both inside and outside incineration and may require owners and occupants of land to dispose of garbage and refuse originating on such land by incineration on the premises in a manner specified by law. We have not enacted a by-law requiring the installation of gas incinerators, and it may not be done.

Minor items still to be worked out include number and type of refuse containers used. We feel any regulation on this matter should apply equally, both in gas incineration districts and in areas where we pick up refuse weekly. We base this on our original assumption that in four weeks the average household will acquire almost as much non-combustible garbage in an incineration district as a similar household would in a single week in any other district where incinerators are not installed.

One other problem faces us in the old districts, and that is a matter of chimney adequacy. We have not yet studied the cost of converting a class "B" chimney (one that is too small and not properly constructed for use with the incinerators) to a class "A." The Saskatchewan Power Corp. is working on this matter and will submit a report when it has definite information. ◄◄

Penny Powers, home economist with the Saskatchewan Power Corporation, explains the operation and use of an incinerator to a housewife.

SURVEY OF HOME OWNERS
(October 1959)

Question	Answer	Percent
How often do you burn garbage?	Every day	18.1
	Every other day	48.5
	Every third day	33.4
At what time of day usually?	Morning	34.4
	Afternoon	40.9
	Evening	24.3
How long do you set automatic timer?	1½ hours	13.6
	2 hours	18.2
	3 hours	59.0
	4 hours	9.2
Do you detect any smoke?	Yes	6.1*
	No	93.9
Do you detect any odor?	Yes	0
	No	100.0
Do you approve of this type of garbage disposal as compared with present methods?	Better than	93.9
	Equal to	4.5
	No	1.6

* Some but not objectionable

→

South Plainfield's sewerage program calls for laying about 45 miles of sewer lines, much of which requires the use of well points.

←

Specifications stipulate that asbestos-cement sewer pipe be used for most of the work. Here the sewer is being laid in a built-up area.

How to Build Sewers Today For Tomorrow's Growth

South Plainfield, N. J., bases its sewerage program on estimated needs up to the year 2000 and sets up a schedule of expenses and of revenue requirements

By **CHARLES T. WALSH***

South Plainfield has developed rapidly in the past ten years, but its future prosperity depends on attracting new industry and eliminating sanitary conditions detrimental to public health. The present sewerage-construction program will resolve the sewage problem permanently and will promote industrial expansion. It is not a crash program but one carefully considered from all angles, present and future needs, initial and long-term costs, operating expenses and revenue requirements.

To carry out the program, the mayor and council, by ordinance, established the Borough of South Plainfield, New Jersey, Sewerage Authority. The Authority's sanitary-collection system comprises trunk, branch and lateral sewers and two pumping stations with provisions for metering. The Middlesex County Sewerage Authority will provide treatment at its Sayreville, N. J., plant while interceptors constructed by Plainfield, the Plainfield Joint Meeting (Plainfield, North Plainfield, and Dunellen) and the Middlesex Authority will convey sewage to the plant. Thus, it will involve the cooperation of several agencies.

Ten Zones

Located about 26 miles southwest of New York City, the borough's 8.2 square mile area is desirable for both residential use and industry. The current population is approximately 16,000 persons with a density of three persons per acre. Estimated growth figures show that the population will increase to about 38,325 persons and a density of 7.3 persons per acre by the year 2000.

We divided the borough into ten drainage zones, each comprising an area in which all sewers will gravitate to a common point. Sewers in four zones will flow by gravity into the interceptors, while those in six of the zones require pumping. In two, the sewage must be lifted twice before reaching the interceptors. Alltold, three lift stations will be needed, of which one is included in the present construction program, to accommodate approximately 80% of the existing population. We did not use any future-growth area remaining unsewered in estimating future project revenues.

In general, specifications call for the use of asbestos-cement sewer pipe throughout the system. This type affords flatter grades (necessary by reason of the flat topography) and permits less infiltration of ground water; future house services may be conveniently connected to the sewer.

Trunk sewer diameters range from ten inches to 24 inches, while the minimum size for lateral and branch sewers is eight inches. Construction contracts provide for installation of six-inch house services to a distance two feet beyond the curbs of streets for connection to individual properties. Property owners must connect to the system at the terminus of the house connections. Sewers will have sufficient depth to intercept flow one foot above cellar floors, intercepting sewage only, not floor drain systems.

---

* Mr. Walsh is a partner of Bowe, Albertson & Associates, Engineers, New York, consultants for the Borough of South Plainfield on the sewerage project.

For construction purposes we divided the system into six contracts; four for sewer construction, one for the pumping stations and one for the electrical work. Table I lists the low bid on each contract as well as a brief description of the work.

The sewer contracts require completion within 365 calendar days from the date of notification to commence work and the pumping station and electrical contracts require completion in 180 days. All contracts carry a liquidated damages clause.

The Authority intends to finance, construct and operate the project, and to fix sewer charges sufficient to cover all annual expenses and debt service plus at least 40%. As provided in the trust agreement, surplus funds must first be used to build and maintain a debt service reserve fund which in aggregate will equal the largest amount of principal and interest requirement falling due in any bond fiscal year. The surplus will also flow to the various other funds, established to pay principal of and interest on the Series B Bonds, to pay for renewals and replacements of the Authority's sewer system, and to redeem Series A Bonds and Series B Bonds.

The total Series A Bond Issue amounted to $3,200,000 and another $410,000 was obtained in Series B Bonds. The Series B Bonds are subordinate to the Series A Bonds as a lien on the net revenues derived.

Table II gives estimated revenues, charges and surplus figures for six representative years taken from the yearly schedule from 1962 to 1999.

While actual construction will cost slightly more than $2½ million, the total cost including engineering, interest during construction, bond discount, legal expense, lands and rights-of-way, and contingencies, amounts to slightly above $3,600,000.

The Authority proposes to levy and collect a connection charge of $50 for each sewer connection unit. Each single-family dwelling will be considered as a sewer unit while sewer units for commercial and industrial establishments will be based upon metered waste volume of 250 gpd of sewage contributed to the system. The connection charges must be paid within a two-year period beginning with the date that the dwelling owner is notified to connect. A borough ordinance now in effect requires connection to the system by owners of houses or buildings along the line of any sewer.

Once that all connections are paid for, annual service charges will account for practically all revenue. We estimate this will amount to

Table I

Description	Total Estimated Bids
North Central Section (consists of approx. 53,500 lineal feet (10.13 miles) of sewer pipe in diameters from 8" through 12", inclusive). Low bidder: Cruz Construction Co.	$ 508,770.00
Northwest Section (consists of approx. 56,280 lineal feet (10.76 miles) 8" through 16", inclusive). Low bidder: Ernest Renda Contracting Co.	545,017.75
Central Section (consists of approx. 49,450 lineal feet (9.37 miles) of sewer pipe in diameters from 8" through 24" inclusive). Low bidder: Ernest Renda Contracting Co.	623,886.00
Northeast Section (consists of approx. 76,560 lineal feet (14.5 miles) of sewer pipe in diameters from 8" through 24", inclusive). Low bidder: Ernest Renda Contracting Co.	742,519.00
Pumping Stations (2) Low bidder: Tower Construction Co.	98,950.00
Electrical installation (Pumping Stations) Low bidder: S. M. Electric Co.	6,278.00
Total	$2,525,420.75

Table II

Estimated Costs and Revenues

Year	Gross Revenue	M.C.S.A.* Charge	Admin., Maint., etc.	Total Expense	Total Debt Service	Annual Surplus
1962	$470,000	$ 95,920	$30,000	$162,039	$134,313	$173,648
1972	451,250	108,096	35,000	179,645	192,500	79,105
1978	450,000	108,096	35,000	179,725	189,794	80,481
1979	450,000	108,096	35,000	145,356**	212,356	92,288
1989	450,000	108,096	35,000	145,356	214,431	90,213
1999	450,000	108,096	35,000	145,356	210,250	94,394

* Middlesex County Sewerage Authority sewage treatment and disposal charges.

** Annual capitalization charge of $34,369 to Plainfield Joint Meeting ends in 1978.

Note: difference between M.C.S.A. charge plus administration, maintenance, etc., and total expense includes power costs and Plainfield Joint Meeting charges.

a sum of about $450,000 annually.

Since the Authority desired to establish service charges on an equitable basis, we recommended that all sewered basic units be charged at the annual rate of $75 per unit. A multiple of the basic unit service charge applies to commercial buildings while charges for industrial units will be based on metered waste volumes. Table III lists the number of service units existing in the project area as of March 1960.

Table III

SERVICE UNITS

Source	Structures	Estimated Service Units
Residential		
Single-family homes	3344	3344
Two-family homes	112	224
Single-family with place of business	9	18
Apartment buildings	8	32
Apartments over business establishments	*	64
Rented rooms over business establishments	*	8
Subtotal	3473	3690
Schools (3770 pupils)	6	301
Commercial		
Office buildings and offices	5	8
Restaurants	12	18
Taverns and bars	6	12
Service stations and garages	18	27
Churches, clubs, societies, etc.	5	5
Business establishments		
Less than 15 employees	84	42
15 to 50 incl. employees	8	8
Over 50 employees	1	2
Subtotal	144	127
Industrial		
0- 1,000 gals. per day	4	7
1,000- 5,000	4	29
5,000-10,000	1	35
10,000-15,000	1	50
15,000-25,000	1	85
25,000-35,000	1	140
Subtotal	12	346
Totals	3635	4464

* Structure count included under "Commercial" heading.

Following is our suggested scale of multiples for commercial establishments:

Type	Service Unit Multiple
Offices	1
Restaurants	1½
Taverns and bars	2
Service stations	1½
Churches, clubs, societies	1
Public buildings	1
Business establishments—	
Less than 15 employees	½
15 to 50 employees	1
over 50 employees	2

The multiple shall be fixed by resolution of the Authority for any type establishment not itemized.

All sewage collected in South Plainfield will flow to the Middlesex County Sewage Authority's treatment plant and, following treatment, will be discharged into Raritan Bay. The charge for the use of these facilities will be based on the amount of flow, biochemical oxygen demand, suspended solids and chlorine demand. The Middlesex County Sewerage Authority maintains two meter chambers located on the South Side Interceptor, one at its entrance to the Borough of South Plainfield and one at its exit. The difference between the entrance and exit meter readings is the quantity of flow contributed by South Plainfield. Sampling of wastes at both meter chambers determines the costs for items other than flow.

Since it is not necessary to construct treatment facilities and as sewer construction is already under way, part of the system will go into service and revenues will commence during the latter part of 1961. The work is being done under the supervision of Resident Engineer William J. Crowley.

Many people take part in a project such as this and all cannot be mentioned. However, special credit is due the Sewerage Authority members working under the chairmanship of Henry V. Decker at the start of the project and now operating under the chairmanship of George J. Linger. ◄◄

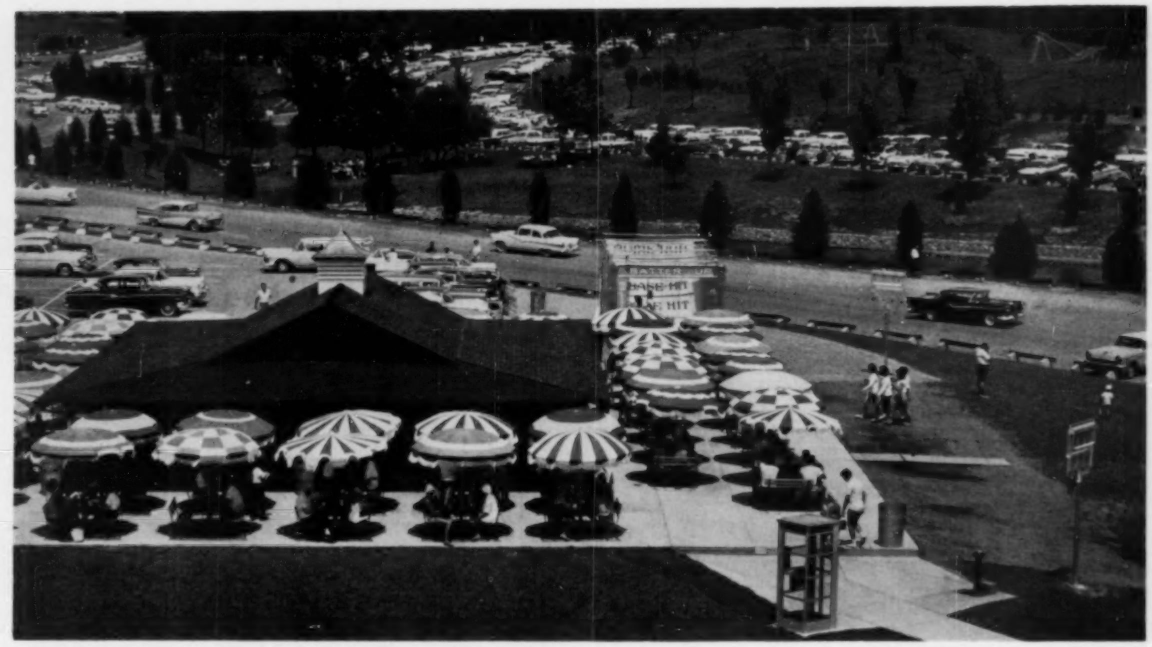
Six Cities Fight to Keep Police-Firemen

Six Illinois cities are trying to enlist support that will defeat a proposal in the state legislature to prevent policemen from performing fire-fighting duties in municipalities between 10,000 and 500,000 population. The cities are Champaign, Evanston, Glencoe, Highland Park, Park Forest, and Rock Falls.

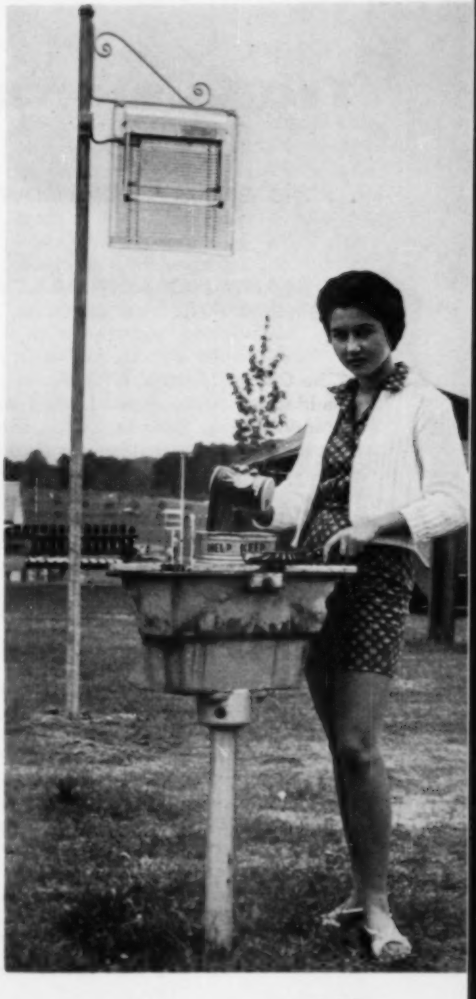
The mayors of each city are circulating an appeal, stating that the proposed measure will increase taxes and lower the standards of police and fire service in their cities. They also protest that it violates the "home-rule" principle and represents an invasion of duties and responsibilities of local government by preventing them from adopting techniques that they feel are in their best interests.

Glencoe has had a police-fire service since 1954. Each man receives a $50 bonus for the combined duties. Police here received credit for saving a boy's life through training in fire-fighting and rescue operation. Champaign started its program in 1957. Last year, these dual-trained and equipped patrols assisted at over 200 fire alarms. Park Forest maintains separate police and fire departments but trains policemen and firemen in each other's duties. Police in radio-equipped patrol cars usually arrive at fires before the fire apparatus. Within a week after the program started, a policeman on patrol entered a burning house and helped contain the fire.

Rock Falls began its program three years ago and has been able to adopt a 40-hour week for 13 of its 17 men. Evanston has 100 policemen with fire-fighting training. During 1960, police cooperated on 366 calls. On 78 of these, they arrived before the first fire apparatus. ◄◄



The units, located at the corners of the patio, electrocute bothersome insects, including the pesky June bug.



Insect killers eliminate bugs from the picnic area.

Electronic Hotfoot Eliminates Bugs

A new electronic device has practically eliminated the insect problem at Camp Dearborn in the wooded lake country of southern Michigan. Dearborn's Mayor Orville L. Hubbard sparked the drive for a foolproof method to reduce the insect population at this 586-acre wood and water camp.

Instant Electrocution

During a span of 2½ years the city purchased 75 Gardner bug eliminators at a total cost of $8,764. These units, mounted above head height on steel poles, contain two 15-watt G. E. black-light fluorescent tubes which attract the insects to a grid of wires for instant electrocution. The larger units lure insects from as far as 150 feet; the range of the smaller ones is 75 feet. Although if touched the panels feel warm only, insects are electrocuted on contact.

The installation of a unit at each of the canteen patio's four corners, made possible the elimination of the proposed screen construction to protect the diners. Several more around the swimming pool patio relieve the bathers from the bug problem, particularly at night when lights attract them. Tent Village also reaps the benefits of the virtually bug-free night air with 22 units protecting 218 tents. Outdoor television areas attract more people since the bug invasion no longer makes the viewing uncomfortable.

The average 12-hour-per-day operation of each unit costs less than 1½ cents. Dearborn's success in eliminating the bug hazard is attracting increasing numbers of its citizens to the popular play area. ◄

Transistorized-Radio Network

. . . is a giant step toward protecting lives and property in Newark, N. J.

By **MARIANO J. RINALDI**
Business Administrator

The City of Newark, N. J., recently added to its illustrious history in communications progress with the switch-over of the entire municipal radio system from tube-type mobile radios to a network of 275 RCA "LD" (low battery drain) transistorized two-way radios. The new radio system which serves the police, fire and public works departments, represents the first citywide installation of transistorized radio equipment by a major city.

Newark's decision to convert to transistorized equipment could well spearhead the opening of a new era of radio communications for municipalities. The city installed the nation's first one-way radio system on October 3, 1934, and was one of the first to install two-way radios nearly twenty years ago.

The city had been using a mobile system leased from the Bell Telephone Co. but, with the issuance of a court decree ruling Bell out of the private radio business, Newark was faced with the task of replacing the entire system by January 1961.

The first step was the appointment of a special eight-member committee to handle all aspects—from planning type and size of the system to specifying it.

Since the radio system was to be sub-divided into three separate networks, each with its own operating frequency — police, fire and public works—two members from each of these departments were on the Newark Radio Committee. The committee comprised Joseph F. Weldon, police director, Joseph J. Cuff, police radio technician, James T. Owens, fire director, and Arthur J. Moore, superintendent of fire alarm and telegraph system, George Andress, public works director and Edward Cyr, chief engineer of the department of public works. The committee was rounded out by Herbert Gladstone, purchasing agent and the author served as chairman.

A planned schedule was set up for replacing the entire radio system, with November 1, 1960 as a deadline. The first decision was whether we should specify tube or transistorized two-way radio equipment. No other major city had ever taken the transistorized "step," but then Newark had been first in one-way radio and, still later, in two-way radio communications. Why not transistorized radios now, if they would increase our communications efficiency? The

Mariano J. Rinaldi

←

Five-position dispatching arrangement in police headquarters speeds police service; main dispatcher, at the right, can take over control of the entire system in a major emergency.

→

James T. Owens, director, Fire Department; Leo P. Carlin, mayor; and Frederick Waidelick, chief engineer, Fire Department, inspect the new fleet of two-way radio-equipped station wagons.

results of a series of tests were conclusive in favor of the newer, transistorized radios.

Transistorized radio equipment has two major advantages over conventional tube units. It is more reliable, provides maximum "on-air" time with minimum maintenance. Transistorized equipment cuts vehicle battery drain to a minimum.

The Newark Radio Committee unanimously agreed that transistorized radios were essential to provide the best possible public-safety communications.

Detailed Specifications

Our committee then analyzed all of the transistorized equipment on the market and prepared detailed specifications. A new antenna site was selected to overcome "dead" spots and "fade" areas that were prevalent in the old radio system in outlying city areas. A series of field tests pinpointed the best location atop the city-owned Martland Medical Building. After all bids were received and subjected to a 30-day evaluation study, the committee conducted a series of "on-air" installation tests with several different units to compare battery drain and ease of servicing. Based on the results of these tests, and the fact that it was low bidder, the city authorities decided to install RCA's new mobile and base station equipment throughout the city.

Five major reasons why the company was selected to supply, install and maintain the city's new radio system were:

Its transistorized radio was comparable in price to tube equipment.

Our tests proved the equipment would give us more on-air time, less out-of-service time.

It has an extremely low battery drain in standby position, about as much current as the instrument panel lights in an automobile.

The equipment is easy to get at to service.

The RCA Service Co. could provide factory-trained technicians to maintain our equipment at a centrally located drive-in service center, seven days a week, 24 hours a day.

The radio equipment has been in service since early September and our radio messages for police, fire and public works departments completely blanket, without any dead spots, the 26-square-mile area of the City of Newark.

Here's how the system operates in each of the three departments:

At present, there are 133 police vehicles equipped with "LD" mobile units, a unique single-position control and four-position dispatch station serving as the radio nerve center. This dispatching arrangement was planned by the Newark Radio Committee to handle incoming telephone calls from the public faster by having them channeled right to a police dispatcher. Each of the police dispatchers has a dazor-arm microphone, transmit switch and alternate foot switch, a speaker with individual volume control and a 30-position telephone desk set for incoming calls from the public. In front of each dispatcher is a unique "car-in-service" panel board containing a numbered push button for every police car in the system. When a car has been dispatched via radio, the dispatcher presses the corresponding button which illuminates at all five dispatch positions. Thus, all dispatchers can tell at a glance those cars which are on call and those which are available to receive calls. When the call has been completed, the officer reports via radio, and the dispatcher presses the button and the light goes out in all positions.

When one of the five dispatchers is transmitting, the other four positions are inoperative due to a lockout circuit. However, the main dispatcher can lockout the other four dispatch positions at any time in a big emergency, simply by flicking his transmit switch. Each operating position is equipped with a white light that illuminates when that particular operator has control of the transmitter, and a red light that flashes on at the other four positions to indicate that the transmitter is in use. This provides both visual indication and automatic circuits to prevent the possibility of two operators using the transmitter simultaneously.

The entire police radio network, as well as the fire and public works communications systems, are tied in with a number of civil-defense base stations located throughout the city. While it has not been necessary to use the system for a C.D. emergency, dispatching has been done from civil-defense transmitters to keep the radio equipment in peak operating condition.

A total of 102 two-way radios are in service in fire apparatus, including supply and telegraph repair trucks. The main dispatch center is maintained at fire-alarm headquarters in City Hall. Here, the transmitter is operated from a single-dispatch position, although the dispatcher may select an emergency standby transmitter-receiver by turning a switch on the remote control console. Also provided is a standby remote-control unit.

Three hook-and-ladder trucks can serve as auxiliary base stations at any point in or out of the city should the base station fail or civil-defense authorities order a dispersal of units. Each of the trucks is equipped with portable antennas and sufficient cable to permit connection with the mobile radio in the truck after the ladder is raised to its full 100-foot height.

Operating separately, but with provision for tying in with the police and fire networks via the civil-defense setup, is the division of water and the sanitation department systems. Each department has 20 mobile radios installed in service vehicles. The base-station equipment and antenna, as in the case of the police and fire department's radio systems, are remotely controlled via wirelines at the main dispatch room in the department of public works' headquarters. Remote control units are provided for separate dispatching facilities for the water and sanitation departments.

Adequate to meet today's communications requirements, we are aware of the need for greater communications facilities in the future. Additional mobile units are already planned for both the fire and police departments. The City of Newark is proud of its modern radio system, is proud that it is the first major city to install transistorized two-way equipment exclusively in the major public safety departments. Other city and state agencies are already planning systems based on Newark's pioneering. ◄◄

Rx for Ailing Downtowns

In most cases, says City Manager Bert W. Johnson of Evanston, Ill., central business districts will perk up and take a healthier outlook if it plans improvements according to the following six suggestions:

- **provide better, more convenient access**
- **supply more parking space geared to meet parking demands**
- **improve traffic circulation for both vehicles and pedestrians**
- **sidetrack unnecessary traffic and the all-day parker to streets and areas not used by traffic circulation**
- **provide good municipal services**

To help make the Evanston downtown more attractive, the city has scheduled the installation of a unique new lighting that will provide 50% more light on streets and walks and the lighting of buildings. At the same time the city is rehabilitating its 30-year-old electrical system.

Downtown also is getting new street trees that give the area a more soft and fresh appearance. Merchants meet 75% of the cost of planting the trees and the city contributed 25% and will take care of the expense of maintaining the trees. ◄◄

Shoring Without Pile-Driving

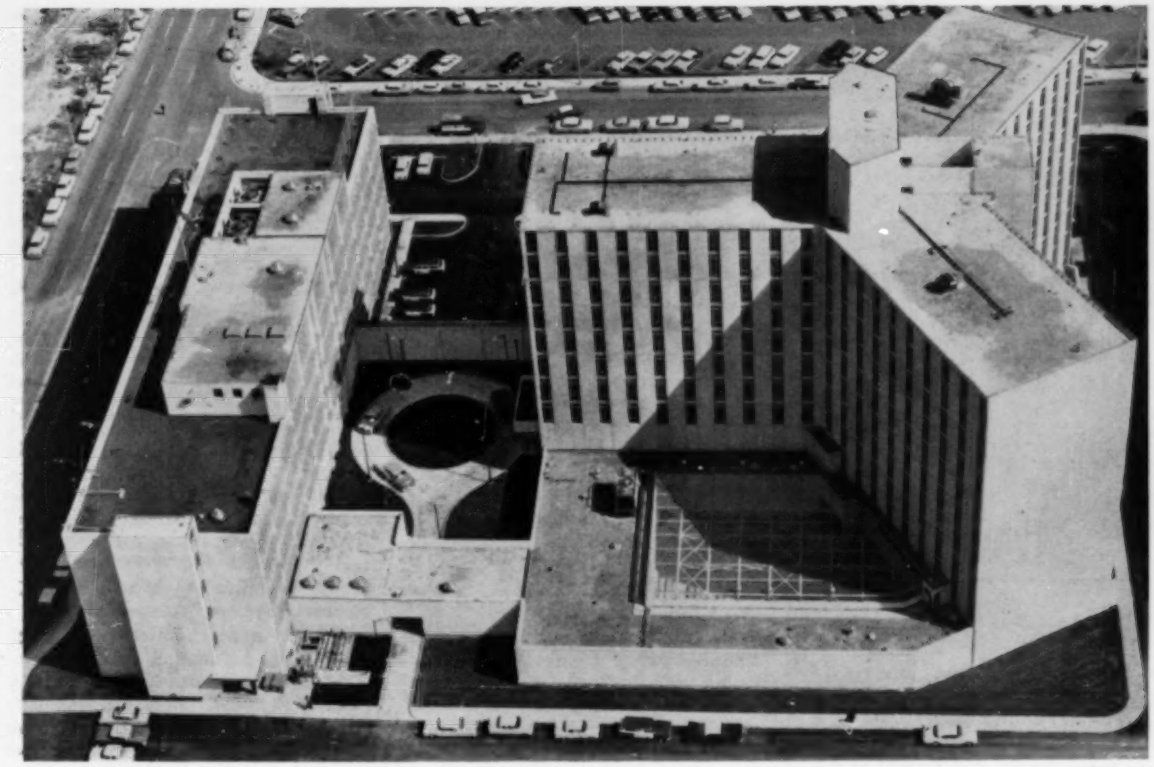
When building an 11-foot-diameter sewer in Washington, D. C., the contractor had to solve the problem of shoring a deep trench. For his solution, he used a preboring method rather than conventional pile-driving. The job consisted of laying, in a monolithic pour, 22 feet below grade, 1,400 feet of the 11-foot-diameter concrete storm sewer. Problems in excavation involved maintaining traffic on the street, digging around a number of utility crossings, keeping road and property damage to a minimum, and shoring up the deep, wide trench.

The preboring method consisted of dropping H-beam piles into holes augered out by a Ka-Mo A-295 earth-boring machine. After the contractor broke through the concrete road surfacing, he moved in a truck crane with the boring machine mounted on the boom. This unit, which can bore 16-inch-diameter holes 28 feet deep, bored holes on both sides of the trench to be opened at predetermined locations.

The H-beams were then dropped into the holes and excavation by backhoe and clamshell started. As excavation progressed, workmen placed wood shoring lengthwise along the trench in between the slots formed by the series of H-beams. Bracing was inserted crosswise as the ditch was deepened.

Advantages of the preboring method over pile-driving includes less noise, lower investment in machinery, fewer delays because of less moves and ability to work in tight quarters, less property damage and faster placement of H-beams in the ground. ◄◄

Workmen bore holes at predetermined spacings for the placement of H-beams used to support the shoring.



Dade County's new ten-story Y-shaped jail and the adjoining public safety building (left) feature ultra-modern facilities; the circular driveway between the buildings leads to the entrance where prisoners are brought in.

Miami Gets Ultra-Modern Jail

Described as the finest jail in the nation for the construction cost, by James V. Bennett, director of the Bureau of Prisons, Dade County, Florida's new Y-shaped jail opened March 25.

The jail and the adjoining Public Safety Department Building were built by Coda Associates, architects, of Miami. The combined cost of both buildings was less than $5,300,000 for both construction and equipment.

When Sheriff Thomas J. Kelly took office in 1953, he began campaigning for better prisoner facilities. This resulted in the construction of the new rehabilitation structure, which features three wings of prisoner habitation above the main floor, with each wing separated from the outside wall by a continuous partition of tool-resisting steel bars and plates. The jail, using Southern Steel Company prison equipment, may be opened and closed, wing by wing, and floor by floor as needed.

The main floor is a vast entrance area where prisoners pass through the registration procedure into the incarceration space. The design provides areas of detention for all types of criminals, enabling the administrators to segregate prisoners by type of crime and age, and by sex.

The building has two recreation areas for physical therapy, and complete medical clinics for each sex. The jail facilities include a chapel-auditorium and weekly services of all faiths are held.

Guarding Prisoners

Officers carry no guns in the building. An unobstructed inspection corridor around the perimeter of each floor permits the guards to observe prisoners continuously. Each floor has a control station housing an elaborate alarm system; the station has direct communication with the perimeter walk.

The adjoining 107-office Public Safety Building has five floors of laboratory and office space and one floor for a pistol range. The building consolidates the entire police and fire system for Dade's Metropolitan Government. Westinghouse elevators provide access to the floors.

The most advanced procedures for public safety are utilized. The crime laboratory, which cost $70,000, has the best equipment and personnel in the area south of Washington, D. C.; the fire-arms section has a new bullet-recovery tank that is rated the most modern of its kind.

Intensive training and research went into the Westrex Corp. microwave communications system, which calls any officer to his patrol car and assures transmission of emergency messages under the most adverse conditions. An internal microswitch, activated by the insertion of a card by the dispatcher when he calls a police car, shows a white light on a wall lighting fixture if the car is already on call. If the car is available, a corresponding car number on the wall-fixture is red. ◄◄

Aurora, Colo., receives ground garbage from 58% of its households and learns . . .

What Ground Garbage Does To a Sewerage System

By K. S. WATSON and CURTIS CLARK*

Conclusions concerning the mass installation of food-waste disposers to solve community garbage problems:

1. The food wastes from 58% of the population carried in the sewer system and treated in the sewage-treatment plant create no serious problems.

2. Food wastes discharged into the sewer system via food-waste disposers will increase the concentration of the sewage in B.O.D., suspended solids and grease, but very little volume is added. Handling this more concentrated sewage requires somewhat more work, care and diligence to insure satisfactory performance.

3. Experience in Aurora indicates that eliminating the garbage problem by handling it with the sewage relieves the city of a difficult problem in human relations in those areas served by disposers. The problem becomes one of engineering that can be readily met by sewerage-department personnel.

4. A review in detail of the data under study indicates that the increase in the per-capita-per-day contribution from persons being served by disposers over the classic design figures for typical sanitary sewage is as follows:

	Percentage Range	Pounds (approx.)
B.O.D.	20 to 40	0.03
suspended solids	25 to 40	0.05

In 1951 and 1952, Aurora, like many other cities, struggled with the basic problems of community sanitation—sewage treatment and garbage disposal. Fortunately, the mayor and city council after much consideration, with the counsel of a citizens' committee, decided that these two problems should ultimately be solved by constructing a sewerage system that could also handle garbage. The city administration proposed to encourage the installation of a food-waste disposer in every home and commercial establishment handling food, and in this way eliminate garbage and attendant rats, flies and roaches from extensive sections of town.

With this in mind, the city retained a consulting engineer to design a sewage-treatment plant with a capacity sufficient to handle all community garbage as well as sewage. Before placing this plant into service in July, 1953, the City Council adopted an ordinance requiring that all new dwellings and commercial buildings, containing kitchens, shall provide a garbage grinder.

Complete Treatment

The original plant consisted of a bar-screen, a primary settling tank, two digesters, a trickling filter and a secondary settling tank. Little was known about the load one could expect from food-waste disposers. The consultant therefore provided double the usual digester capacity to permit the plant to handle a 100% disposer load.

The city added a chlorine building in 1955 but no contact tank because of space limitations. However, sterilization by applying chlorine at a number of points, including ahead of the trickling filter and in the secondary sedimentation tank, has not been too satisfactory. Thus, the plant is at present expanding chlorination facilities by adding two chlorinators, provisions for the use of ton chlorine cylinders, and a dispensing ring for chlorine application in the secondary sedimentation tank beyond the point of recirculation. This change will provide adequate reaction time.

In 1958 the city replaced the manually cleaned bar-screen with a new disintegrating bar-screen and also installed a Parshall flume to measure sewage flows more accurately.

As so often happens, people constructed houses near the once isolated plant and soon started complaining about odors. To reduce odor the city constructed a mechanical aeration unit of 2.4 hours detention capacity at maximum flow to precondition or freshen the sewage. This unit was completed in September 1960. The sewage passes from the bar-screen through the freshener and then to the primary settling tank. Since the aerator went into operation, odor conditions and treatment efficiency have improved.

The treatment plant discharges into Westerly Creek, which is dry most of the year. Thus, the effluent discharged must be of high quality. Plant efficiency averages 89% B.O.D. reduction and 90% suspended solids reduction. More experience with the pre-aeration unit plus adequate chlorination facilities will somewhat improve plant efficiency.

---

* Mr. Watson holds the position of consultant, water management and waste control, with the General Electric Company, Schenectady, N. Y. Mr. Clark is the superintendent of sanitation of Aurora, Colo.

The per-capita sewage discharge from Aurora is much lower than the 100 gallons per person per day often considered representative. We felt that a good way to confirm the accuracy of the metering equipment at the sewage-treatment plant was to check these figures against water use in the homes discharging sewage into the city system. Table I shows the comparison between water use and sewage discharged for the first quarter of each of the years between 1956 and 1960. The close agreement between the two sets of figures corroborates the fact that per-capita sewage discharge for Aurora is about 50 gpd. The first quarter was used so that irrigation and rainfall would not upset the comparison.

Reasons for low water consumption and sewage discharge include:

- **Aurora is 100% metered**
- **Practically no industrial plants take water from the city**
- **Aurora is a bedroom town and often two or more members of a family obtain their water requirements for at least one-third of the day outside the city.**

The operators of Aurora's sewage-treatment plant experience no serious trouble even though 58% of the connected homes use food-waste disposers for their garbage.

For years, Aurora residents separated rubbish from the garbage to permit the city's hog-feeding contractor to pick up garbage only. Homes and commercial establishments which do not have disposers still receive this type of service.

Aurora has had the usual number and type of problems and complaints about garbage collection. The usual nuisance conditions have at times been a distasteful accompaniment. One difficult problem consisted of keeping the people satisfied. Complaints ranged from the manner in which the representatives of the collection firm handled the cans or failed to replace them in the proper location to improper separation of garbage and rubbish on the part of the householder and the possible necessity of increased rates.

The city administration of the early 1950's attempted to convert this problem from one of practically unsolvable human relations to one of engineering. By discharging the garbage down the sewer the load in the sewer system and sewage treatment plant would be increased but the problem was being converted into suspended solids, B.O.D. and grease, all susceptible to engineering solution.

Since homes with disposers are relieved from paying the garbage-collection fee in Aurora, rather ac-

Table I

Water Use and Sewage Discharge During the First Quarter

	Water Consumption in thousands of gallons			Sewage Discharge in thousands of gallons		
Year	Total	Daily Average	Per Capita	Total	Daily Average	Per Capita
1956	138,195	1,520	50.7	116,039	1,280	42.5
1957	153,517	1,690	50.9	160,116	1,761	53.3
1958	161,334	1,765	48.5	163,687	1,800	49.5
1959	184,825	2,028	51.5	173,000	1,900	48.2
1960	169,852	1,860	43.7	178,000	1,960	46.0

Table II

Food Waste Disposers Installed Each Year and Population Served

Year	Residential	Population Served	Commercial
Apartments prior to 1956*	300	1,200	
Homes prior to 1956	2,900	11,600	
Totals prior to 1956	3,200	12,800	
1956	568	2,272	146**
1957	234	936	–25
1958	589	2,356	–15
1959	937	3,748	–26
1960	643	2,572	28
Totals 1956 through 1960	2,971	11,884	
Grand total	6,171	24,684***	108

* Estimate

** Installed in 1956 and prior to that time.

*** The 24,684 persons served by food waste disposers represents 58% of the 42,552 persons served by the treatment plant.

curate records are available on the number of units installed. Table II shows the number of units installed and the population served. This table also shows that 6,171 disposers are now in use in residential units. Census and school official figures indicate that the average-size family in Aurora is slightly over four persons, giving a total of 24,684 persons served by the disposal units (6,171 x 4). The sewer system serves 42,552 people and 58% of this connected population use food-waste disposers.

The number of commercial installations has decreased in recent years, mainly because the establishments have outgrown grinders originally installed and partly because the private collectors of garbage are anxious to have the large load that such establishments generate. In some cases, the city is happy to have these extremely heavy load producers disconnected from the sewer system because the receiving main may not be large enough (or has not been installed on a proper grade) to prevent clogging.

Regarding the question, "To what extent do the disposers increase the concentration of the city sewage?" Records for the years 1956 through 1960 are summarized in Table III.

Since B.O.D. and suspended-solids characteristics for typical city wastewater each range generally between 225 and 275 ppm, the characteristics reported for Aurora are about what might be expected considering the fact that this sewage carries the additional food-waste disposer load. The analytical techniques used in the sewage-treatment-plant laboratory have been carefully calibrated against those used by the Colorado State Department of Health. Agreement has been good on split samples run by the two laboratories.

Table IV summarizes per-capita B.O.D. and suspended-solids loadings at the plant along with the average daily flow. Note that the loadings fall well below the long-accepted figures of 0.17 lbs. of B.O.D. and 0.2 lbs. of suspended solids per capita per day for typical sanitary sewage. The 1960 loadings of 0.136 lbs. of B.O.D. and 0.157 lbs. of suspended solids, which represent city sewage carrying food wastes discharged through disposers from 58% of the population, seem to bear out the fact that such food wastes are not having serious effects on sewage quality.

Next we consider the operation of the treatment plant and the maintenance of the sewer system. Actual experience indicates that the disposer wastes being treated are causing no serious problems.

Table V summarizes treatment-plant-operation information. The figures shown for the years 1957, 1958 and 1959 include fairly heavy expenditures for chemicals of various kinds purchased and used in an effort to control odors. We believe aeration will for the most part correct the odor problem thereby reducing chemical costs in the future. The absence of incremental cost increases indicate that the disposers, despite their being added in annual numbers ranging from 234 to 937, did not greatly increase treatment cost. Thus, in cost as in other aspects, disposer wastes are creating no serious treatment problems.

Table III

Volume and Average Characteristics of the Sewage

Year	Total Gallons	B.O.D. ppm	Suspended Solids ppm
1956	509,760,000	271	277
1957*	643,792,400	323	321
1958	748,761,900	318	332
1959	776,192,200	290	348
1960	803,622,400	316	365

*** Increases 1957 over 1956 primarily the result of the load originating in Hoffman Heights, a subdivision annexed and connected to the sewer system.**

Table IV

Population, Sewage Volume and Per-Capita Loadings at the Sewage Treatment Plant

Year	Average Gallons Daily	Population Connected	Pounds* B.O.D.	Pounds* Suspended Solids
1956	1,396,603	30,100	0.106	0.107
1957	1,763,814	33,213	0.142	0.141
1958	2,051,024	36,326	0.147	0.156
1959	2,122,000	39,439	0.130	0.156
1960	2,201,705	42,552	0.136	0.157

*** Typical sanitary sewage has a per-capita-per-day loading of:**
B.O.D. 0.17 lbs.
Suspended solids 0.20 lbs.

Sewer Maintenance

Aurora handles all of its own sewer maintenance. Experience indicates that the disposer wastes being carried in the sewers are creating no serious problem.

Table VI summarizes maintenance costs for the sewer system over the same study period of 1956 through 1960. The costs for 1959 are high because of an extensive maintenance program in a newly annexed subdivision.

Again no annual incremental increase in maintenance costs appear, which would be the case if the ever-increasing numbers of disposers were responsible for serious maintenance problems.

Some minor changes can be observed at times in a system handling sewage and garbage over one which handles sewage alone. A home with a food-waste disposer discharges more grit into the sewer than one without. Such grit consists for the most part of egg shells, coffee grounds and ground bones. This grit will at times tend to settle out in sewers with inadequate grades and at other points, thus requiring more frequent flushings or other maintenance of questionable sections.

Aurora is in a good position to know about grit because the original plant provided no grit-removal equipment. This means that periodically grit must be removed from the digesters. One might expect that under these conditions that grit would accumulate in the digesters somewhat more rapidly and therefore be removed more frequently. Grit from disposers is not as critical a problem as it is sometimes thought; or the Aurora plant, without grit-removal equipment, would have serious operating problems.

Sewage carrying food wastes is

higher in grease content and this grease at times may tend to congeal in the sewer system, thereby increasing maintenance. The grease of disposer origin also tends to come to the surface in the primary settling tank, as does grease of sewage origin, requiring the plant operators to exercise a bit more diligence than might otherwise be necessary. It further seems that sometimes grease and detergents combine in the sewer system to create more headaches for the operator. Aurora has not evaluated the grease problem extensively to date but hopes to put more effort in this direction in the near future.

Sewage carrying disposer wastes is also higher in suspended solids than normal sewage. These solids can sometimes create problems by clogging the sewer. Such clogging has most often happened in Aurora in sewers which are to some degree obstructed by roots, pieces of masonry or objects introduced by the users.

The reaction to stabilize the solids from food wastes sometimes appears to go forward more rapidly in the sewer than is the case for conventional sewage solids apparently because these latter solids are already closer to stability. Food wastes in Aurora's sewage may tend to make it somewhat more septic, possibly contributing to the previously mentioned odor problem. However, with homes near the plant, efforts would have probably been necessary to control odors whether food wastes were present or not.

Per-Capita Loadings

An original objective of this survey was to establish the per-capita contribution to the sewer system, in terms of B.O.D. suspended solids and grease, of persons served by a disposer. This could not be accomplished as easily as anticipated but by making some assumptions, one can arrive at an approximation. Since the per-capita sewage discharge from Aurora is approximately 50 gpd, we can assume that the classic per-capita loadings from the sanitary sewage alone could be cut in half. Concentrations shown in Table III bear out this assumption (concentration increment for typical sanitary sewage plus increment contributed by disposers). The sanitary sewage loadings when cut in half would then become B.O.D., 0.085 lbs. and suspended solids, 0.10 lbs. per capita per day.

Now if the 1960 per-capita loadings at the treatment plant of 0.136 lbs. of B.O.D. and 0.157 lbs. of suspended solids per capita per day are used and the conventional sanitary-sewage loadings deducted from them, the remaining figures should represent the food-waste-disposer load from 58% of the population. These figures come out as 0.051 lbs. of B.O.D. and 0.057 lbs. of suspended solids per capita per day. Converting these figures to cover 100% of the population we come up with 0.088 lbs. of B.O.D. and 0.098 lbs. of suspended solids per capita per day. This would thus represent about a 50% increase in per-capita load resulting from the use of disposers.

This percentage figure is obviously high because the sizable contribution from commercial disposers is also included in the weights used in these computations. The per-capita contributions can also be arrived at using another approach. From Table IV it is apparent that the per-capita loadings increased in the five-year period between 1956 and 1960 as follows: B.O.D. (0.136-0.106) 0.03 lbs. and suspended solids (0.157-0.107) 0.05 lbs. Table II further shows that during this same period an additional population of 11,884 people, who use disposers, was connected to the system. The normal sanitary-sewage load from this newly connected population, however, should not in any respect increase the per-capita contribution. Since no industrial contribution was added during the period in question, the increase must have resulted from the disposer contribution from the private homes and supporting commercial establishments.

On this basis, it can therefore be reasoned that each person in Aurora served by a disposer is contributing 0.03 lbs. of B.O.D. and 0.05 lbs. of suspended solids to the city sewer system each day above his sanitary-sewage contribution. These figures are somewhat on the low side because there was also a slight growth in the population which is not served by disposers. The pattern of the B.O.D. concentrations also tends to indicate that the 0.03 lbs. figure is slightly low. Possible variations in the commercial-disposer load over the time period under review could also have had an effect on these per-capita figures. Using this concept, the disposer contribution represents an 18% increase in B.O.D. and a 25% increase in suspended solids over the classic design figures for sanitary sewage.

Since limiting conditions made it impracticable to determine the exact per-capita loadings for a person served by a food-waste disposer, more work will be done in Aurora on this subject in the near future. ◄

Table V

Annual Sewage Treatment Costs

	Operating Costs*				
Year	Debt Service	Plant Operation	Totals	Cost per Person	Cost per 1,000,000 Gals.
1956	$30,760	$34,111	$64,871	$2.16	$127.20
1957	30,760	30,801	61,561	1.85	96.0
1958	30,563	31,170	61,733	1.70	82.4
1959	30,430	38,891	69,321	1.76	89.33
1960	30,250	33,931	64,181	1.51	79.87

* Does not include expenditures for capital improvements during years under study or funds being accumulated for this purpose.

Table VI

Annual Sewer Maintenance Costs

Year	Total Costs	Miles of Sewer Line	Per Foot	Per Person Connected	Per Million Gallons
1956	$10,937	67.57	$.031	$0.36	$21.50
1957	15,455	79.12	.037	.46	24.00
1958	12,805	82.62	.029	.35	17.20
1959*	21,174	86.53	.047	.55	27.20
1960	19,552	87.97	.042	.46	24.40

* The cost figures are high for this year since sewers in the newly annexed area of Hoffman Heights were given extensive maintenance for the first time.

Patrolman Edward Fluck using the base-station microphone.

Running a Small Police Force

By **FRANK FORCE**
Manager-Engineer
Hellertown, Pa.

With the installation of two-way transistor radios, a base station and antenna, the Borough of Hellertown, Pa. (population 6,700), has greatly increased its radio reception.

The borough purchased the equipment from Motorola on a ten-year rental and maintenance contract. The rental is $35.67 a month and the maintenance cost $31 a month. After ten years the borough will own the equipment. Motorola charged $250 for installation of the base station and antenna.

The receivers installed in the two police cruisers are Motorola Motracs.

They are fully transistorized and operate directly from the battery and transistorized power supply for the transmitter. The radios operate from either positive or negative ground 12-volt direct-current primary sources. They are fully protected against inadvertent reverse polarity connections. The desk-top base station is complete with microphone, built-in speaker and controls. It has a "Permakey" filter which is guaranteed for the life of the speaker. The desk-stand microphone is well liked by the officers.

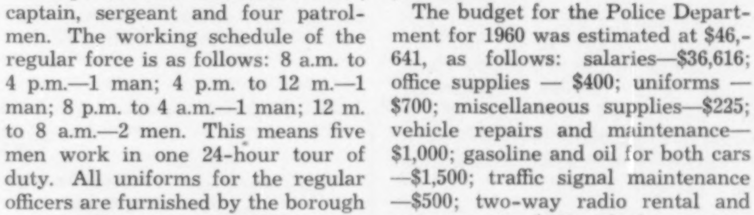
The police radio is connected with the City of Bethlehem. Two telephone numbers are listed in the phone book and when no answer comes from the Hellertown number, the Bethlehem number is called and by two-way radio the borough police is contacted when no one is on duty at the base station.

Police Force

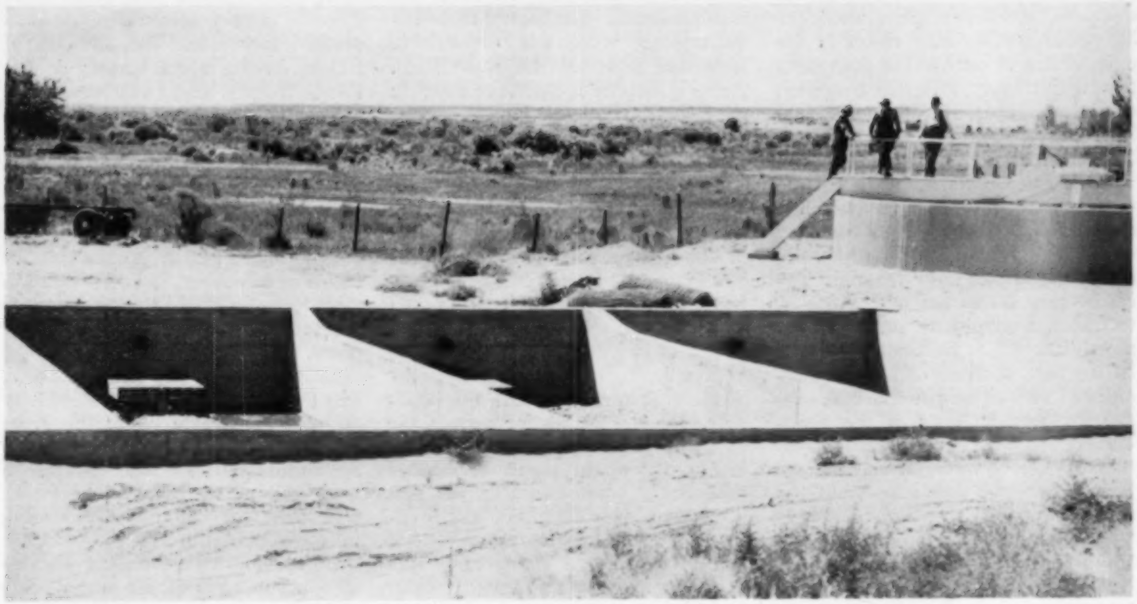
The police force consists of a chief, captain, sergeant and four patrolmen. The working schedule of the regular force is as follows: 8 a.m. to 4 p.m.—1 man; 4 p.m. to 12 m.—1 man; 8 p.m. to 4 a.m.—1 man; 12 m. to 8 a.m.—2 men. This means five men work in one 24-hour tour of duty. All uniforms for the regular officers are furnished by the borough and all officers are paid double-time for six holidays a year. The rate of pay of the chief is $4,834.58 a year with a telephone allowance of $58.50. The captain receives $4,581.88 a year with the same telephone allowance and the sergeant $4,482.10 also with the same telephone allowance. The patrolmen receive $4,408.98 a year. A special police force of twenty men is available to fill in for the regular police when they are on vacation or when emergencies arise. The special police receive $1.70 an hour. The school guard consists of four women and they are paid $1.40 an hour. The police receive two-weeks vacation after the first year of duty and after fifteen years they receive three-weeks vacation. The borough pays for Blue Cross and Blue Shield and the officers contribute to a police pension fund.

The budget for the Police Department for 1960 was estimated at $46,641, as follows: salaries—$36,616; office supplies — $400; uniforms — $700; miscellaneous supplies—$225; vehicle repairs and maintenance—$1,000; gasoline and oil for both cars —$1,500; traffic signal maintenance —$500; two-way radio rental and maintenance—$900; telephone cost—$400; costs for animal control—$200; and capital outlay which covers the cost of the new car and new traffic signals—$4,100.

The executive head of the Police Department is Burgess Warren C. Fritchman. The chairman of the police committee in the Council is Frank Unger and the police chief is Vincent J. Coughlin. The borough manager specifies the police cars, traffic signals and radios. ◄◄



The borough has two Chevrolets, a current model and one of the previous year; the cars are traded in after two years.



In the Great Basin, construction of sewage-purification plants such as this one at Winnemucca, Nev., will alleviate future water shortages.

Better waste treatment will be necessary to assure an adequate supply of . . .

Water for Your Grandchildren

By **PROF. N. WOLLMAN***
University of New Mexico

In addition to death and taxes, one thing is certain: the demand for high-quality water will increase greatly. Within 20 years some areas will not have enough for all requests; priorities will have to determine what uses are most important. Other areas will use less than one-half of the available supply even as far ahead as 2000 A.D.

Evidence indicates that pollution is becoming the main water problem rather than a scarcity of supplies as many have supposed. The solution is not a simple one, however, because studies reveal that the future pollution load will require higher degrees of treatment combined with large quantities of storage to fulfill the demand. The intensively developed portions of the country will not readily find the necessary storage areas. Many now question whether the desirability of devoting land to storage of water outweighs the destruction of other values. Better ways of reducing water pollution appear to be the major task at the present time.

Since 1940, water use has been growing faster than population or economic activity. Population estimates indicate that, if the present rate of growth continues, the United States will roughly contain 250,000,000 people in 1980 and 330,000,000 in 2000. For each 1,000,000 increase, 160,000 acres of land revert to urban use and the new people need an additional 100,000,000 gpd. The present daily withdrawal for all uses now approaches 300,000,000,000 gallons. More distant reservoirs and deeper underground-wells will have to supply some future needs in metropolitan areas and at greater costs.

An overall survey of future water use and availability would not be complete without a tentative trial-balance of the future supply-demand outlook. Although scientists basically understand precipitation evapo-transpiration and stream flow, historical estimates of water use are somewhat questionable. Until a relatively few years ago, no demand existed for the information because abundant water was "free" for the taking. Few bothered to note how much was used for what. In addition, a projected trial balance for the entire nation as a whole would mean little due to local disparities of supply and demand. No national market for water exists comparable to that for oil or steel.

Types of Use

Several types of use employ the same supply and compete directly with each other. Some demand more quality than others. Households and factories will pay somewhat predictable amounts for estimable quantities. Lake water recreation and swampy wildlife refuge uses are hard to measure and difficult to evaluate. Moreover, withdrawals for industrial cooling may result in the evaporation of only 2% of the quantity withdrawn; whereas irrigation may lose substantially more than 50% to evapotranspiration.

---

* This analysis of future water supply and demand draws from Prof. Wollman's report to the Senate Select Committee on National Water Resources and Resources for the Future (RFF), Inc.

Concerning supply, therefore, even a small river basin may easily have more water than that for which a demand exists, but local areas may experience shortages of the quantity or quality which they demand. The result may be so out of balance as to create a surplus of demand over supply for major parts of the basin. In the face of these and other difficulties, researchers undertook the step-by-step analysis of the problem.

Gross use of water in an area can be much greater than supply without creating a water shortage. The only water that is really "lost" is that which evaporates, transpires or leaves the area in the form of a manufactured product. Three classes constitute water use as follows:

- **Withdrawals for irrigation, municipal supply, manufacturing, and steam electric generation.**
- **On-site uses for swamps, wetlands, stockponds and conservation.**
- **Flow uses for hydro-electric power generation, navigation, waste carrying and recreation.**

Withdrawal uses are subject to reasonably accurate measurement. On-site uses may be approximated directly or indirectly depending on the type. Flow uses do not affect the total quantity.

Future Requirements

The researchers had to make some assumptions of future requirements, the most important of which is that reasonably clean streams and lakes are objectives of national policy. From this another water requirement resulted: enough flow to carry away wastes remaining after treatment and clean enough to support aquatic life. Existing waste treatment cannot assure the agreed-upon minimum of four parts of oxygen per million parts of water. Accordingly, stream water must be available to dilute the plant effluents.

Experiments with available data indicate that if a high degree of treatment combines with sufficient amounts of dilution water to obtain the minimum oxygen requirement, there are likely to be adequate flows to meet navigation and power needs. Total flow demands, then, result from the flow required to meet projected evaporation and transpiration losses plus the flow required for waste dilution. Comparing these requirements with the dependable sustained flows of the river basin yields a surplus or deficit of flow. In the case of a deficit, future reservoir storage may aid in the establishment of an increased sustained flow.

Reducing the problems of future predictions of population and water uses to the simplest terms resulted in the choosing of 22 separate regions for study purposes. Future water-using activities with respect to population estimates and existing stream flow determined the storage necessary to assure the demand. Several factors are still questionable. No one knows for certain the effect of price on demand. Future technology might result in smaller amounts of water required per unit of product manufactured. Improvements in the treatment of wastes might result in a lessening of the major demand requirement, water for dilution.

The accompanying table indicates the results of the survey by regional areas. The map indicates the boundaries and future demand in relation to supply. As a whole, total withdrawals of water may nearly double between 1954 and 1980, and triple by 2000. Actual losses from gross withdrawals would also rise but at a much lesser rate. The addition of future on-site requirements to net losses from withdrawals results in raising the 109,000 mgd in 1954 to 190,000 mgd in 1980, and 250,000 mgd in 2000. The dilution requirement for the most efficient degrees of treatment of water-waste further requires 210,000 mgd in 1980, and 360,000 mgd in 2000. At the present levels of treatment, the 1980 dilution requirements might be as large as the total flow available for all purposes.

Industrial use for manufacturing and thermal generation of electricity account for nearly all of the great projected increase in withdrawals. Agricultural use, which took more than half of the 1954 withdrawals, will grow only slightly, accounting for only one-fifth of the total in 2000.

Comparing two different regions at opposite ends of the water-scale yields startling results. New England has a surplus of water; in the Great Basin it is already scarce.

New England presently contains 9,000,000 acre-feet of storage, even though present and future demands constitute only a small fraction of the supply. Existing storage has been

REQUIRED FUTURE FLOWS

(compared with maximum sustained flows)

Region	Maximum sustained flow*	Required flow under projected minimum-cost program 1980	2000
	(Millions of gallons per day)		
New England	64,700	14,200	19,500
Delaware and Hudson	31,100	13,800	19,800
Chesapeake Bay	50,800	24,000	26,900
Southeast	207,400	75,400	99,400
Eastern Great Lakes	38,600	15,800	29,000
Western Great Lakes	40,000	36,200	59,100
Ohio River	108,500	19,400	34,300
Cumberland	15,500	7,700	12,700
Tennessee	42,600	24,400	29,700
Upper Mississippi	58,900	30,400	32,800
Lower Mississippi	47,500	22,200	36,100
Upper Missouri	26,900	33,600	51,100
Lower Missouri	14,500	3,600	7,100
Upper Arkansas-White-Red	10,500	7,900	11,700
Lower Arkansas-White-Red	70,300	16,900	27,300
Western Gulf	40,400	40,900	43,500
Upper Rio Grande and Pecos	1,000	7,300	10,300
Colorado	10,400	19,300	21,700
Great Basin	9,300	12,100	13,500
Pacific Northwest	136,300	42,800	44,300
Central Pacific	55,300	44,500	54,500
South Pacific	300	10,900	15,700
U. S. Total	1,080,800	523,300	700,000

*** To avoid double counting, these estimates are based on runoff within each region and do not include runoff from upstream areas that flows into a region.**

built to hold some of the flow for the long dry spells. One method of meeting the higher demands of the future would be to concentrate on better treatment. The dilution for 1980 under the highest existing levels of treatment would require 8,980 mgd; net losses from direct use would increase this figure to 10,500 mgd. Additional storage amounting to 2,400,000 acre-feet would meet this flow requirement. With a total necessary flow of 19,500 mgd in the year 2000, 6,100,000 more acre-feet would be required.

A second alternative would be more storage with a lesser degree of treatment. In that case the 1980 required flow could be 65,000 mgd, the total available, leaving higher treatment levels to satisfy the demand for the ensuing 20 years.

A minimum-cost program of storage and treatment, a combination of the two methods previously listed, may provide the best solution. Present estimates indicate the required flow for such a combined program would be 14,200 mgd in 1980 and 19,500 in 2000. Additional storage required in the same years would be 3,400,000 acre-feet and 6,100,000 acre-feet, respectively.

In the Great Basin, the inter-mountain depression from which no river flows to the sea, the long-term average flow is 10,500 mgd and the maximum potential sustained flow is 9,300 mgd. Losses from use in 1954 already took most of the available water, only 3,700 mgd still being available for additional use. Dams supplied 4,100,000 acre-feet of storage for this area in 1954. The highest feasible level of waste treatment and the greatest practicable amount of additional storage, 6,500,000 acre-feet, would yield a dependable flow of only 9,300 mgd. The 1980 demand will be 12,100 mgd of which only 1,200 mgd will be for dilution under these conditions. The Great Basin area will have no choice between emphasis on storage or waste treatment.

Deficit by 1980

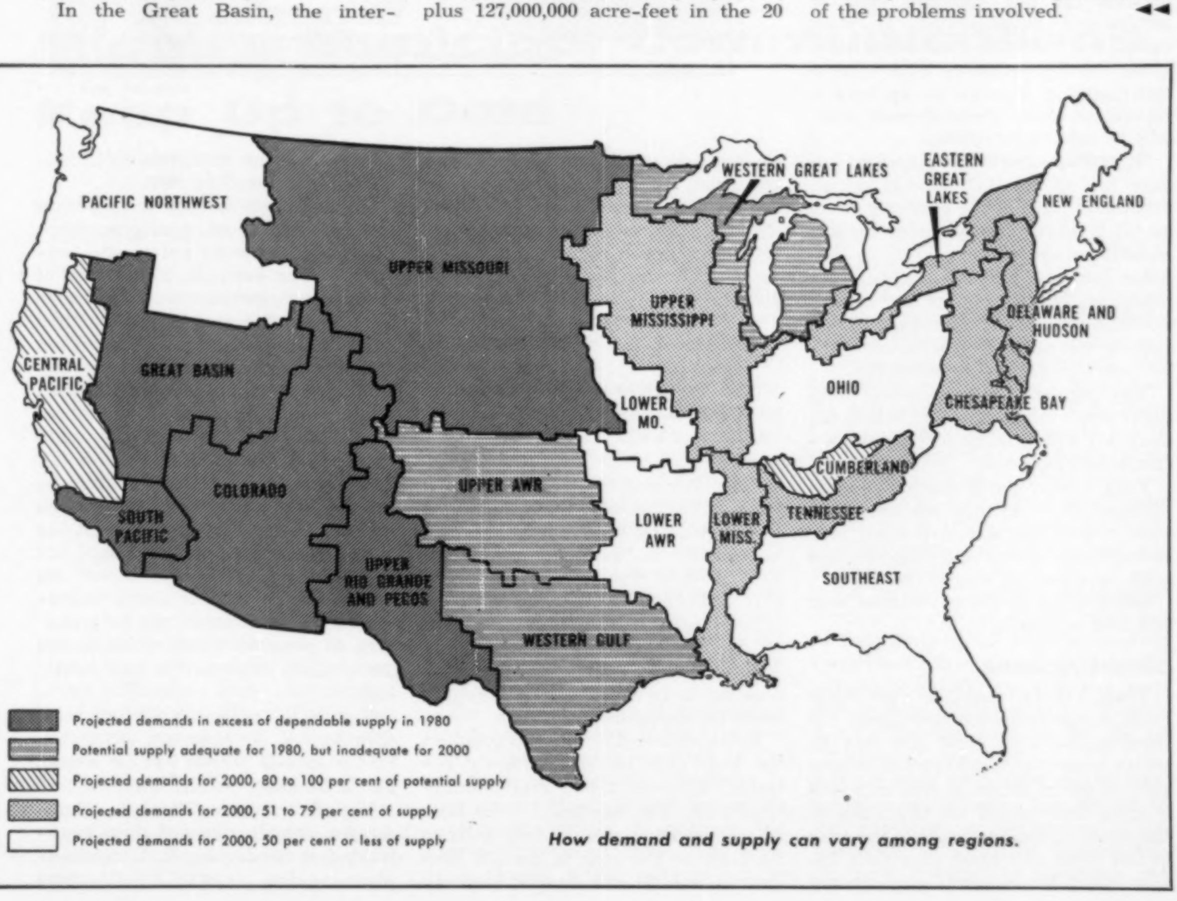
With the present patterns of water use, rate of population growth and economic activity projected, the maximum development of supply will result in a deficit by 1980, even with maximum treatment.

To provide the total country-wide sustained flows included in the table, 315,000,000 additional acre-feet of storage will be necessary by 1980, plus 127,000,000 acre-feet in the 20 years following. Storage capacity of 278,000,000 acre-feet existed in 1954.

Within 20 years, many western states will want more than the available sustained flow of water; within 40 years, most will. Water supply in the West must take one of the following three directions (or some combination thereof):

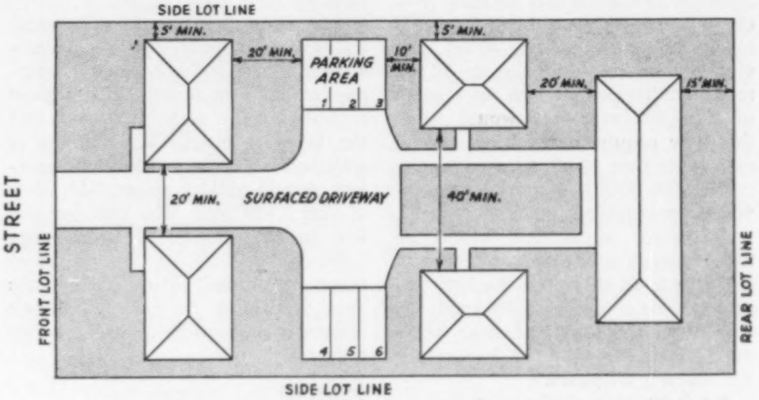
- **Economizing on use and increasing the supply by using trans-basin diversions, weather modification and desalinization.**
- **Continuing the present predominately irrigational use and limit economic development.**
- **Reducing irrigation and conservation water, resulting in more for industrial and urban uses.**

Because this is the first study of its particular nature, and because it relies on imperfect data and a rigid set of assumptions, this study will not yield the unrelenting pattern of the future. Rather, it is a first step upon which others can build and modify as more information and new technologies become available. The University of Mexico is continuing research on this project in an effort to clarify and cast new light on some of the problems involved. ◄◄

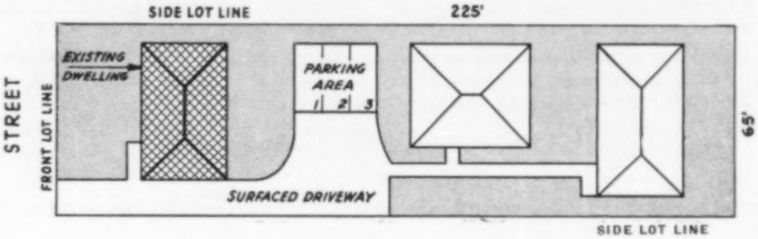

PACIFIC NORTHWEST
UPPER MISSOURI
WESTERN GREAT LAKES
EASTERN GREAT LAKES
NEW ENGLAND
UPPER MISSISSIPPI
DELAWARE AND HUDSON
CENTRAL PACIFIC
GREAT BASIN
LOWER MO.
OHIO
CHESAPEAKE BAY
CUMBERLAND
COLORADO
UPPER AWR
SOUTH PACIFIC
LOWER AWR
LOWER MISS.
TENNESSEE
UPPER RIO GRANDE AND PECOS
SOUTHEAST
WESTERN GULF
■ Projected demands in excess of dependable supply in 1980
▤ Potential supply adequate for 1980, but inadequate for 2000
▨ Projected demands for 2000, 80 to 100 per cent of potential supply
▩ Projected demands for 2000, 51 to 79 per cent of supply
☐ Projected demands for 2000, 50 per cent or less of supply

How demand and supply can vary among regions.

How Sacramento, Calif., Develops Deep Lots



Resourceful planning and design turn wastefully deep lots into desirable neighborhoods.



Within the City of Sacramento, Calif., the R-1 single-family zone normally permits only one single-family dwelling on each lot. The city recognizes, however, that this regulation results in a hardship to certain property owners. These are the owners of very deep lots—those which exceed 160 feet in depth.

To permit the owner of a deep lot to develop his property more adequately, the city allows:

- **further subdividing the property with new public streets and normal-sized lots, or,**
- **the property to be developed as a bungalow court.**

The city insists on the first method if it is physically possible, either individually or in conjunction with neighboring properties. However, the location of existing buildings, the lack of sufficient lot area, or the conditions of surrounding property sometimes makes it impossible to provide for this standard type of subdivision development. In such case, the zoning ordinance then gives the discretionary authority to the planning director to approve a bungalow-court development subject to certain conditions.

Bungalow-court development of deep lots in the R-1 Zone is not an automatic right of the property owner. It is allowed only under certain conditions and when the city is satisfied that the normal single-family character and density of the neighborhood will not be damaged. Regulations will not permit a motel, tourist court or similar development.

The property owner must meet eight minimum conditions before his deep lot will qualify for bungalow-court development.

First, the property cannot be subdivided in a normal manner with new streets and standard sized lots, either individually or in conjunction with neighboring properties.

Second, the property must be over 160 feet in depth.

Street Access

Third, there must be an open court access from the street past the dwelling unit at least ten feet in width where units are erected on one side of the court or 20 feet in width if units are erected on two sides of the court. Dwelling units to the rear of the front unit must provide a 20-foot court where units are erected on one side or 40 feet if erected on two sides.

Fourth, the total number of dwelling units allowed on the entire property must be no more than one for every 5,200 square feet. For example:

Lot Area in Square Feet	Total Dwelling Units Permitted
7,800 to 12,999	2 units
13,000 to 18,199	3 units
18,200 to 23,400	4 units

Any dwelling unit or units now existing on the lot must be included in determining how many units can be erected on the rear of the lot. For example, if the area of the property is 15,000 square feet, and there is an existing dwelling on the front of the lot, only two units may be erected on the rear of the lot, thus making a total of three dwelling units on the entire property.

Fifth, all dwelling units erected on the rear of a lot are normally required to be detached single-family dwellings. For example, if the area of the property permits two units to be built on the rear of the lot, they cannot be built as a duplex, but only as two separate buildings each containing one dwelling unit.

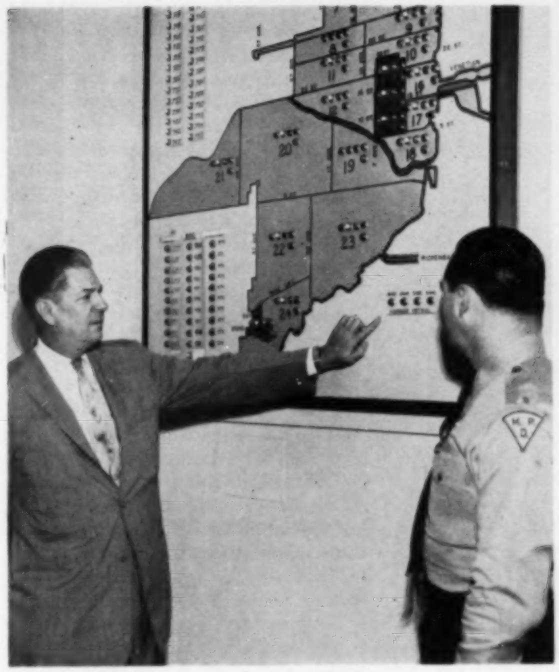
The planning director may permit dwelling units as duplexes when this would promote better site conditions. For example, if the area of the property permits seven units to be built on the rear of the lot, they may be allowed as three duplexes and one single-family unit, or any combination of duplexes and single-family dwellings totaling seven units. No triplexes or multiple-family buildings are allowed.

Sixth, at least one off-street parking space must be provided on the property for each dwelling unit—or a paved area, carport, or garage.

Seventh, paved areas should be kept to a minimum in order to provide as much usable open "green" area as possible. "Green" areas are particularly important to rear dwellings.

Eighth, the planning director must approve all development plans before a special permit can be issued, and a building permit obtained.

The Sacramento Planning Commission, which prepared these regulations, is headed by R. L. Rathfon, planning director. ◄◄



Supt. Demby discusses police communications with a uniformed police officer.

The fire dispatching center is the heart of fire communications.

Miami's Municipal Communications Keep Up to Date

By **BEN DEMBY,** Superintendent*
Communications Division, Miami, Fla.

A big modernization program is improving communications in our police and fire departments. The General Electric Co. supplied 163 mobile radio units, twenty table-model transmitter-receivers, three desk remote-control units, three 250/330-watt base stations, and eight portables. Most of this is for single-frequency operation in the 152-to-174-megacycle band, the remainder for both dual and single frequency use in the 450-to-470-megacycle range.

In total we now dispatch emergency radio transmissions to our more than 600 mobile radios over seven different radio frequencies. This includes the Miami Police Department, Miami Fire Department, Building Department, Public Service Department, Traffic Engineering and the Engineering Department, the Dade County Juvenile Officer, Dade County Levee Control, Dade County Fire Department, Miami Springs Fire Department and 16 other municipal law enforcement agencies in the area.

An emergency radio net covering the southeastern coast of Florida ties the major public-safety agencies together. This emergency radio net set up by the City of Miami in 1945 is monitored 24 hours a day with a roll call each morning at 9 o'clock.

All radio transmissions on our radio circuits are recorded on three four-channel automatic Dictaphone recorders.

The Dispatching and Operations Section also operates 12 teletype circuits. The teletype machine is far more efficient than the telephone as it gives a written record and when sent automatically it reduces the chance for human error. The teletype circuit, while not as fast as radio, still can handle all routine traffic, which leaves our radio channels for emergencies.

Dispatching and Operations also maintains a complete IBM file on all automobiles registered in Dade County. The 1,800,000 cards are in three different files: License Number — Name File — Motor Number. Files are also maintained on all boats registered in Dade County and there is a suspended-drivers license file of over 110,000 cards.

All "wanted" cars are made up on cards from our numbered messages, as well as from all reports received from the Federal Bureau of Investigation, and city, county and state Automobile Underwriters Associations. We also have a file on all "recovered" cars.

Since most of the law enforcement agencies in this area are served by this communications center, all information is available immediately by radio, teletype, or telephone. ◄◄

---

* The author is one of the best known municipal emergency radio technicians in the United States.

Two years ago this Little League ballfield was a swampy morass.

Mount Holly's Refuse Program

. . . at $2.24 per capita per year provides land for new parks from reclaimed swamps

By **R. H. van DEUSEN** and **JACOB GREENWALD***

Refuse collection and disposal in Mount Holly, N. J., is a real bargain. At a per capita cost of $2.24 per year, residents receive semi-weekly collections during the three summer months and weekly collections the balance of the year as well and reap the benefits of reclaimed land made possible by the operation of sanitary landfills.

One new 17-yard Leach Packmaster on a Ford chassis services our 13,271 residents. The three-man collection crew works on a task basis; they are free to leave after completing their route collections and truck maintenance. Observers remark that nowhere else is it possible to find refuse collection crews running with the can from the curb to the truck and run back as quickly.

The first lift of refuse raises the landfill above the swamp.

We formerly boasted that we would pick up everything but the kitchen sink. When a sink appeared at the curb not long ago, we found it necessary to modify our slogan to read: " . . . including the kitchen sink." Most of the unusual items fit in the compaction truck. However, if the driver finds a sofa, tree stump or other cumbersome object he cannot collect, he notifies the superintendent on the next trip to the garage. The superintendent then dispatches a dump truck and any other equipment necessary.

To minimize complaints, we establish responsibility for collections by designating one "right" man and one "left" man on the route. Each is responsible for accumulating all refuse on his side of the street. When the superintendent receives a complaint, he compares the street address with the truck's direction of travel to determine which pick-up man to consult.

To provide better service, we equipped the superintendent's truck with a radio which operates on the police band. City Hall personnel receiving refuse complaints can easily contact the police dispatcher who, in turn, relays the message by radio. The superintendent often dovetails refuse-complaint investigations conveniently with his other duties as head of the public works department by means of the radio contact.

Approved Containers

Two years ago many of the refuse containers consisted of cardboard boxes, oil drums without lids and other unsanitary devices. A new ordinance gave us the tool with which to correct these unhealthy conditions. After a saturation publicity campaign we tagged illegal cans with a red label. To ease the blow and promote good public relations, the inspector attached a green slip to the approved, lidded, galvanized or sturdy plastic containers, signifying an approved can. The red tag indicated that illegal containers which remained on the curb after a certain date would find their way into the truck along with their contents. The resulting scramble exhausted the local dealers' supply of cans. Although we had not planned to have the inspector cover the route a second time, he toured it again, attaching green slips to the new cans in the interest of good public relations. The average resident today has two 20-gallon legal cans. A slogan on our compaction truck requests him to continue using approved containers. Collection men cooperate by putting the lids on the cans after dumping to seal the flies out. If windy, they turn the cans upside down or sideways for extra protection.

---

* Mr. van Deusen is township manager and Mr. Greenwald supervises the public works department in Mount Holly, N. J.

We make the twice-weekly summer collections by hiring an extra crew to make a second pick up after the first crew has completed its daily rounds. This "swing shift" makes it possible to accumulate the extra corn cobs, watermelon rinds, and other bulky refuse which swells the garbage cans during June, July and August and eliminates the need for another truck.

Sanitary Landfill

Mosquitoes are not very happy with our sanitary-landfill program. They previously enjoyed a free rein in one 22-acre site and in another six-acre plot. The low, swampy, marshy conditions adjacent to Rancocas Creek constituted an ideal habitat. They showed their appreciation by propagating faster than rabbits.

In four years, sanitary landfills have transformed these two areas into parks with Little League ballfields, playground equipment, wading pools, beaches, plantings and storage buildings with restrooms. The only difficulty we experienced was "burning" of the new grass in a few areas where the refuse was still generating heat. Because the parks are near the center of our compact, 2.9-square-mile community, even the young children find it convenient to play there during the day and early evening.

Location

The landfill presently occupies a low, 25-acre section in the southern portion of the town. A Caterpillar D-6 with a dozer blade compacts the refuse and covers with the native sandy soil. We have bought a few adjacent dilapidated properties on high ground to furnish extra cover material since the landfill is in a swampy area.

Adjacent municipalities use the landfill and pay $10 per load for the privilege. Past collections have totalled about $2,000 annually. This item does not appear in the yearly collection and landfill costs table because it varies from year to year and is unpredictable for the future. Neither do we attribute some of the public works superintendent's supervisory time for the sanitation operation in this report. If both items appeared, the effect would be to reduce the annual cost because the superintendent does not invest $2,000 of his time in the collection and disposal operations. ◄◄

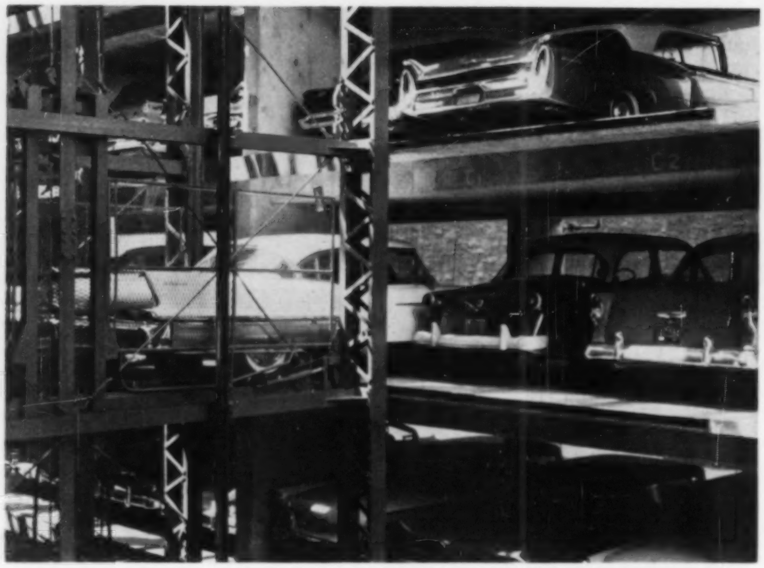
MOUNT HOLLY TOWNSHIP
PLEASE USE APPROVED CONTAINERS
SANITATION
DEPARTMENT

The slogan on the compaction truck reminds residents to use sanitary containers.

Annual Costs

COLLECTION

Personal Services		
Wages, regular crew	**$9,334.42**	
Extra labor for 2nd collection	**1,462.50**	
Pension, F.D.I.C., Workmen's Compensation	**1,481.41**	
Total Personal Services	**$12,278.33**	
Truck Expenses		
Amortization, 5-year term	**$2,000.00**	
Gasoline	**733.84**	
Maintenance	**2,405.99**	
Liability Insurance	**100.22**	
Total Truck Expenses	**$5,240.00**	
Total Collection Cost		**$17.518.38**
LANDFILL		
Personal Services		
Wages	**$3,864.00**	
Pension, F.D.I.C., Workmen's Compensation	**464.00**	
Total Personal Services	**$4,328.00**	
Bulldozer Expense		
Amortization, 10-year term	**$1,400.00**	
Fuel Oil	**369.90**	
Maintenance	**1,403.77**	
Under-carriage repair	**2,338.22**	
Insurance	**162.67**	
Total Bulldozer Expense	**$5,674.56**	
Site Expense		
Cover Dirt/year	**$2,000.00**	
Screen Fence & Planting/year	**200.00**	
Total Site Expense	**$2,200.00**	
Total Landfill Cost		**$12,202.56**
Total Collection and Landfill Cost		**$29,720.94**
PER CAPITA COST		
Collection	**$ 1.32**	
Landfill	**.92**	
Total Per Capita Cost	**$ 2.24**	



Any of these cars can be brought to earth in 90 seconds; this system is Pigeon-Hole mechanical parking sold by Western Industries, Inc., Chicago 32, Ill.

Catculagraph elapsed time recorders keep time on the parked cars.

Fast Figuring of Parking Charges

The new Broad-Locust Garage, located on one of Philadelphia's busiest streets, features the area's first installation of "pigeon-hole" mechanical-parking facilities for 450 autos, and a speedy time-charging and "in-and-out" system that can deliver 180 cars in one hour.

The modern computing system automatically and instantaneously computes parked time for each customer and a communication system provides contact between the attendants and the cashier's office. The manufacturer is the Calculagraph Co., Hanover, N. J.

As a customer drives in, he is directed to one of eight entry gates where he is met by an attendant. First, the attendant takes from one of the racks located at each entry gate an identification ticket which is to be the "history" of the car while it is parked. The attendant enters this ticket in the Calculagraph elapsed-time computer located at the gate and, by touching the "in" lever, imprints on both the office and customer sections of the card the exact time of the car's entry. The attendant then gives one part of the ticket—the claim check—to the customer, and gives the other to the cashier in the office. Still another section of the ticket is attached to the fender of the auto along with a location button.

Mechanical Parking

A dolly mechanism takes the car onto the elevator and to the location indicated on the button. There are three elevators and nine parking levels.

When the customer wishes his car, he presents his claim check to the cashier, who enters it in the Calculagraph computer and pushes the "out" lever. The computer prints the time the car has been parked. There is no disputing the time, as the customer has had possession of the ticket at all times, and the computation of the parked time is done automatically on the locked Calculagraph "out" computer that is synchronized with the "in" computer.

While the customer is paying the rate for the machine-verified parked time imprinted on his ticket, the cashier calls over the intercom the location of the auto. While she is collecting the money, the attendant already has the car on its way down to the owner. The entire transaction is very fast.

The garage is operated by the Broad-Locust Corp. According to the architect Brenton G. Wallace, Jr., "This facility is the only garage in Philadelphia with direct access, in all weathers, to the underground pedestrian concourses that lead to mid-city banks, hotels, theaters, restaurants, and office buildings." ◄◄

Newark Installs Largest Transistorized Municipal 2-Way Radio System–

Chooses RCA "LD" Equipment for 4 Important Reasons

There were four major reasons why RCA was selected to supply, install and maintain the Newark 2-way radio system: 1. RCA's Transistorized "LD" Unit is comparable in price to tube-type equipment . . . representing a tremendous saving. 2. The "LD" has extremely low battery drain (actually in standby position it draws about as much current as the instrument panel light in an automobile). 3. The equipment is easy to get at, easy to service. 4. RCA Service Company provided factory trained technicians to maintain the equipment at a centrally located drive-in service center, 24 hours a day, 7 days a week.

CHIEF
2ND BATTALION
N.F.D.

The Newark network is the largest major city transistorized system—275 RCA "LD" (Low Drain) 2-Way Radio Units. And the installation is important—it could well spark the opening of a new era of radio communications for municipalities. It insures not only the best operating system, but also the most economical in terms of initial cost and operating savings.

You get dependability and economy with the new RCA "LD" Transistorized 2-Way Radio. Ask your RCA representative; or send coupon for complete descriptive literature.

The Most Trusted Name
in Radio

RADIO CORPORATION OF AMERICA

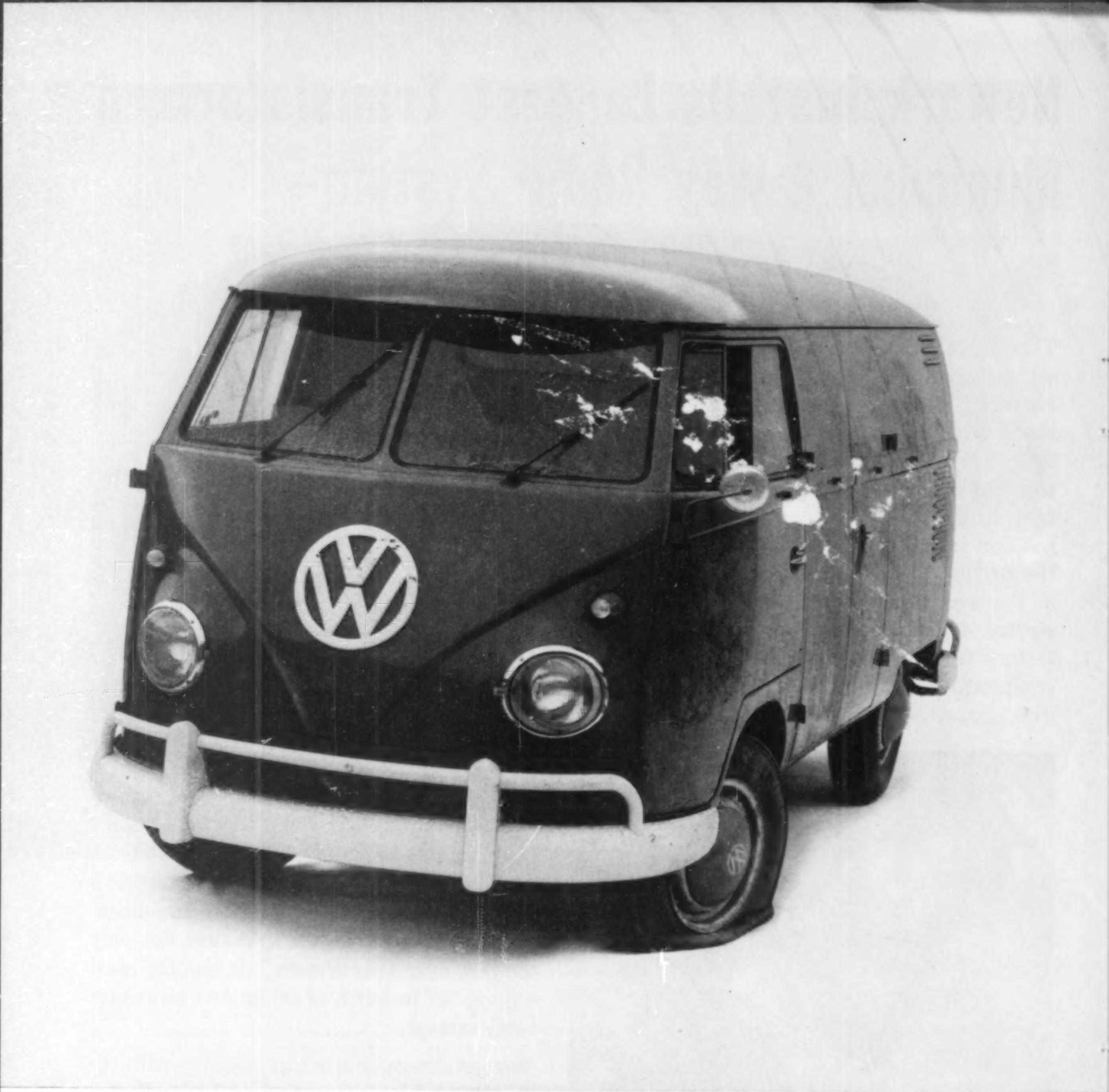
NEW TRANSISTORIZED LD MOBILE RADIO

RADIO CORPORATION OF AMERICA
Telecommunication Center, Dept. X-4
Meadow Lands, Pa.

☐ Please send me FREE literature on the new RCA Transistorized "LD" Mobile Radio.

☐ Have RCA Communications Specialist contact me and explain why this is today's best value in 2-way radio.

NAME ________________ TITLE ________
ORGANIZATION ________________________
ADDRESS ________________ PHONE ________
CITY ____________ ZONE ______ STATE ________



©1961 VOLKSWAGEN OF AMERICA, INC.

35,000 milessssssssssssssssssssss.

This flat's a year late.

Most trucks would have had it 15,000 miles ago.

Not ours.

Volkswagen trucks put almost a ton less load on tires. Even though they carry more than most others.

(Did we ever tell you how we took off weight?)

First, our aluminum magnesium engine is the lightest of its kind in the world.

Second, our trucks are welded together. No bolts. (This is where our strength comes from.)

There are 13,000 automatic welds in every VW truck body. It's a solid hunk of steel. This got rid of the heavy members that bolted trucks need. Like the frame.

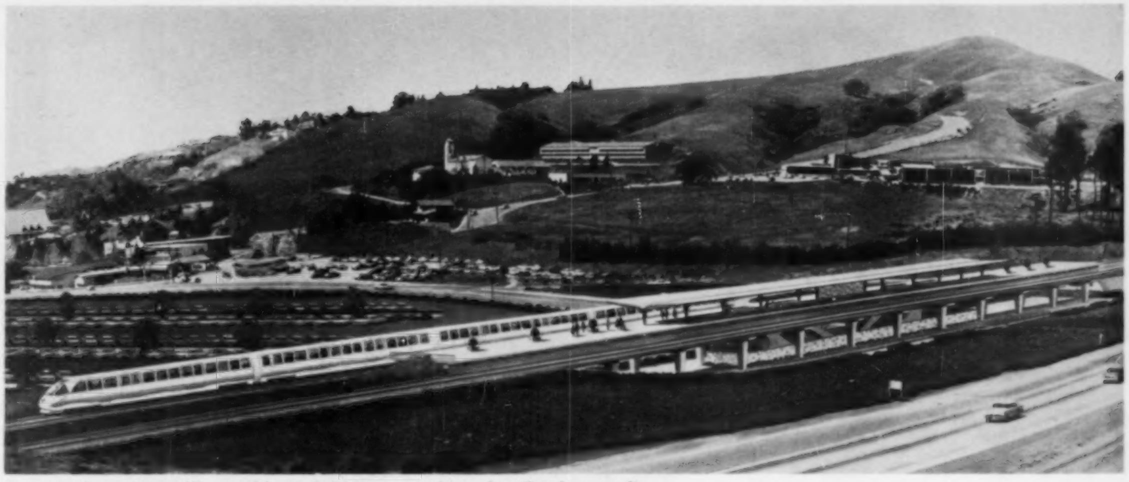
Third, no radiator, no driveshaft, no hood, no fenders. A loaded Volkswagen is as light on its tires as most other trucks empty.

Even our rear engine saves tread. The cargo rides in the middle. The tires share the load equally.

We tell owners to expect about 35,000 miles on a set, normal driving. One set of tires on a Volkswagen lasts almost as long as two on other trucks.

Some owners say they get 40,000.

Others think this is a lot of hot air.



A typical station will provide a 1,500-car parking lot (background) directly beneath the elevated station.

San Francisco Plans the World's Most Modern Rapid-Transit System

Final engineering plans for a high-speed, noiseless rapid-transit rail system have been approved by the San Francisco Bay Area Rapid Transit District Board of Directors.

The $1,025,000,000 rail network of 120 miles of routes, linked at the center by an underwater trans-bay tube, will radiate into the five central counties of the bay region, Alameda, Contra Costa, Marin, San Francisco and San Mateo. These five main-route branches from the trans-bay tube will link the subway complexes of San Francisco and Oakland.

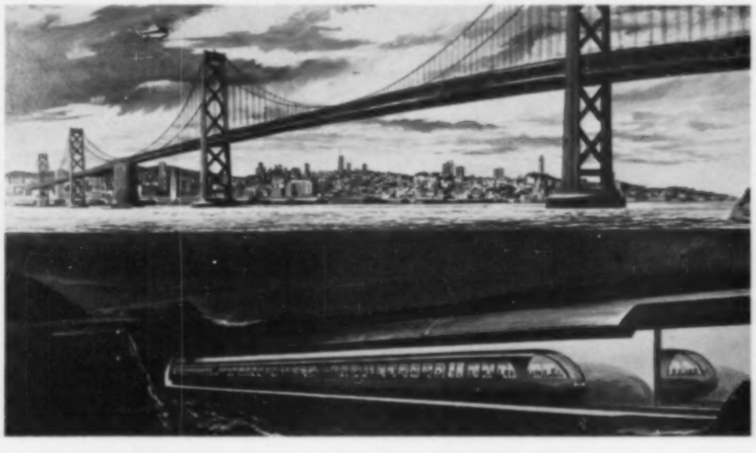
An additional $127,000,000, the cost of the trans-bay transit tube, will be financed from surplus Bay Bridge auto tolls under legislation already passed by the state legislature.

Over-all plans for the project, including a recommended program for its financing, will be officially submitted to the district's five county boards of supervisors by August 1, 1961. A district-wide bond election can be scheduled only after the boards have held public hearings and approved the plans. The district hopes to place a general-obligation bond proposal before the voters at the state primary election in June 1962. A two-thirds majority vote will be required for approval.

The proposed rapid-transit system is designed as an essential component of a total and balanced transportation system. Subways, graceful aerial facilities, developed on modern pre-stressed concrete structures and grade-separated surface lines, comprise the system. A private right of way frees it of interference from other vehicular traffic.

By removing the growing burden of automobile

(Continued on page 125)



An underwater transit tube will carry high-speed electric trains between Oakland and San Francisco.

EXPIRED
60 MINUTE LIMIT
EACH PENNY — 6 MINUTES
EACH NICKEL — 30 MINUTES
ONE DIME — 60 MINUTES
COIN

you know this face

IF YOU ARE ONE OF . . .

105,000,000*

PARK-O-METERS are serving the convenience of motorists and producing thousands of dollars of revenue in some 1450 cities on every continent of the world

* Rounded total population of cities in which Park-O-Meters are installed.

There is a Park-O-Meter model to meet every Specification for on-street or off-street installation.

- Accepts all coins, pennies, nickels, dimes, quarters or tokens through a single coin-slot.
- Adjustable for any time limit.
- Available in either completely automatic or manually operated . . . user energized . . . models.
- Proved through a quarter-century of operation in every climate.

ASK FOR DEMONSTRATION OR TRIAL INSTALLATION

Magee-Hale
PARK-O-METER COMPANY
OKLAHOMA CITY, OKLAHOMA
Factories in U.S.A., CANADA, ENGLAND

(Continued from page 123)

congestion, fast, attractive, inter-urban transportation will help end congestion woes and provide an attractive alternative mode of transportation equal, or superior, to the private automobile in terms of speed, convenience, comfort, economy, safety and social acceptability.

The 80-mile-an-hour, electric-powered trains will be automatically controlled by a central digital computer to provide the most efficient service possible, and utmost safety. The electronic computer will also control an automatic-collection credit-plan system of paying fares. Special credit cards inserted into a turnstile slot when boarding and leaving the trains will eliminate the need for cash fares and commuters will be billed at the end of each month.

Schedules

Trains will travel at an average speed of 50 miles an hour, including station stops, twice that of any existing rail transit system. Printed timetables will be unnecessary as the lightweight trains will run at 90-second intervals during peak hours and maximum 15-minute intervals during off-peak hours.

The trains will measure from two to ten cars in length and will be constructed of stainless steel or aluminum. They will offer passengers wide, comfortable seats, spacious aisles, attractive interior colors, air conditioning, and wide glass windows.

The two-way carrying capacity of each transit line will be 60,000 *seated* passengers per hour, or the equivalent of five modern six-lane auto freeways. Fifty-one passenger stations are to be located for convenient accessibility to inter-urban commuters. Thirty-eight of these stations will have commuter parking lots which will accomodate 43,000 automobiles.

Plans for the 14 subway stations, 22 aerial stations and 15 surface stations will be designed to make for architectural harmony with the community surroundings.

Multi-level subways with easily accessible sidewalk-entrance stairways are planned for the downtown areas of San Francisco, Oakland and Berkeley.

Construction of the five-county rapid-transit system could begin in 1963 if the necessary bond issue is approved by the bay-area residents. Initial operation of trains on some lines is expected within three years and most of the system will be in service by 1968. ◄◄

All-Night Parking on Milwaukee Streets

All-night parking on Milwaukee streets is permitted on payment of $4 per month. The money is applied to purchase off-street space in residential areas. One of four parking garages under construction is in a residential area, which we think is a first. What follows is taken from our all-night parking ordinance.

No vehicle may be parked longer than two hours on any highway in the city between 2 to 6 a.m. with a few exceptions covered by a special-privilege permit. The fee is $4 a month. Money so received is placed in a separate fund.

In congested areas, as designated by the Police Department, vehicles may be parked by special permit during the prescribed hours. These vehicles may be parked on the even numbered side of the street only on those nights bearing an even calendar date during the portion thereof before midnight, and on the odd numbered side of the street on those nights bearing an odd calendar date during the portion thereof before midnight, except that where parking is normally permitted only on one side of the street, vehicles parked pursuant to these provisions may be parked on that side of the street only, on every night of the week.

Application for a special-privilege permit is first approved by the Police Department and is valid for not longer than one month.

An emergency is declared to exist whenever, during a 24-hour period or less, snow falls to a depth of three inches or more. Such a storm is considered a public hazard impairing transportation. The emergency continues 48 hours or until snowplowing operations have been declared completed by the Commissioner of Public Works.

During the emergency it is unlawful to park between the hours of 11:00 P.M. and 6:00 A.M., on any arterial highway or on any street on which there is operated a trackless trolley, motor bus or streetcar line, provided that vehicles may be parked for not longer than three minutes for loading or unloading of passengers or thirty minutes for loading or unloading of property.

Violations carry a fine of not less than $6.25 nor more than $25, or up to five days in the county jail.

It is unlawful to leave any vehicle on any highway of the city continuously for more than 24 hours. Any motor vehicle left on any street for over 24 hours is deemed to have been abandoned. Then it is up to the Commissioner of Public Works to remove it. After ninety days or more he may sell it.

Incidentally, though it is not of primary interest, the annual revenue derived from this program was $427,584 in 1959 and $465,330 for 1960.

Martin E. Bruening
City Traffic Engineer and Superintendent

Inspection Trip

MARYLAND STATE POLICE

Corporal Bob Jennings, U. S. Army-trained pilot for the Maryland State Police, inspects the force's new 305-hp 12E helicopter at the Hiller Aircraft Corp. factory in Palo Alto, Calif., before flying it to Maryland.

The big striping unit, a Ford truck with Schramm compressor and paint-storage tanks, towing a Wald striping machine.

6,400 Miles of Traffic Lines Per Year

In an average year the Virginia Department of Highways marks nearly 6,400 miles of highways with over 33,000,000 linear feet of marking, using 103,053 gallons of paint and 600,092 pounds of glass spheres. The Bristol District, where the department has a new Wald striping machine, marks nearly 2,000 miles of road, including 45 miles of edge-lining. This district is one of eight in the state.

The big, high-speed striping machine, operated by the Bristol District, has four spray guns mounted in tandem that enable it to put down white, yellow or white and yellow line patterns in anticipation of meeting striping requirements for the interstate system. The unit also has provisions for mounting two guns on the side, so that centerlines, lane lines and edgelines can be applied simultaneously.

The truck itself is a Ford F-700 chassis. A Schramm 105-cubic-foot compressor is mounted on the bed, as are two 120-gallon paint tanks, and a tank containing 1,000 pounds of glass spheres. A Paintemp Heater brings paint to proper temperature to assure uniform viscosity. ◄◄

Cities' Plans for Traffic-Signal Systems

The Municipal Index, published by the Buttenheim Publishing Corp., which also publishes THE AMERICAN CITY, asked the city traffic engineers of 26 important cities what plans they had for modernizing their existing signal systems. Their replies are given below.

Akron, Ohio, has coordinated 164 of 320 traffic lights and has plans for installing coordinated equipment on arterial feeder routes.

Burbank, Calif., is adding a signal head with a 12-inch red on a mast arm facing each direction on major streets.

Charlotte, N. C., has accepted a throughfare plan for all arterial expessways. A contract was let for comprehensive traffic plan and parking study of streets, street widths and sidewalks in the central business district. This is to be completed by September 1, 1961.

Cleveland, Ohio, has modernized its traffic signal system by interconnection; all downtown streets and all arterials are now interconnected.

Council Bluffs, Iowa, now has a coordinated progressive system and may go to a radio interconnected system for greater flexibility. The improvement will affect an additional one-way pair of streets and truck routes of the arterial system and a pair of routes around the central business district.

Dallas, Texas, has the latest equipment in the business districts, which selects signal cycle and offsets to fit prevailing traffic conditions. During the last 15 years the arterial streets have been equipped with vehicle-actuated signals that provide separate indications for left-turns.

El Paso, Texas, is coordinating its traffic-signal system, and a new PR signal system encompasses 76 downtown intersections.

Hayward, Calif., is considering further coordination of the traffic signals in the central business districts by wire inter-connection. Eight signals are coordinated and five fixed-time signals are not. Ultimately a master control system will make use of sampling detectors, computors, cycle and off-set selectors which will have control of triple dial, triple off-set, fixed-time, local controllers. This system would be used in the central business districts only.

Kalamazoo, Mich., has a traffic-signal system that is 75% coordinated and, when present equipment is replaced, one of the newer types, such as Monotrol, will "master" the system. Signals on the arteries and in the CBD are already tied into the coordinated system. Improvements planned will be for greater flexibility of operation to cope with variations in traffic flow.

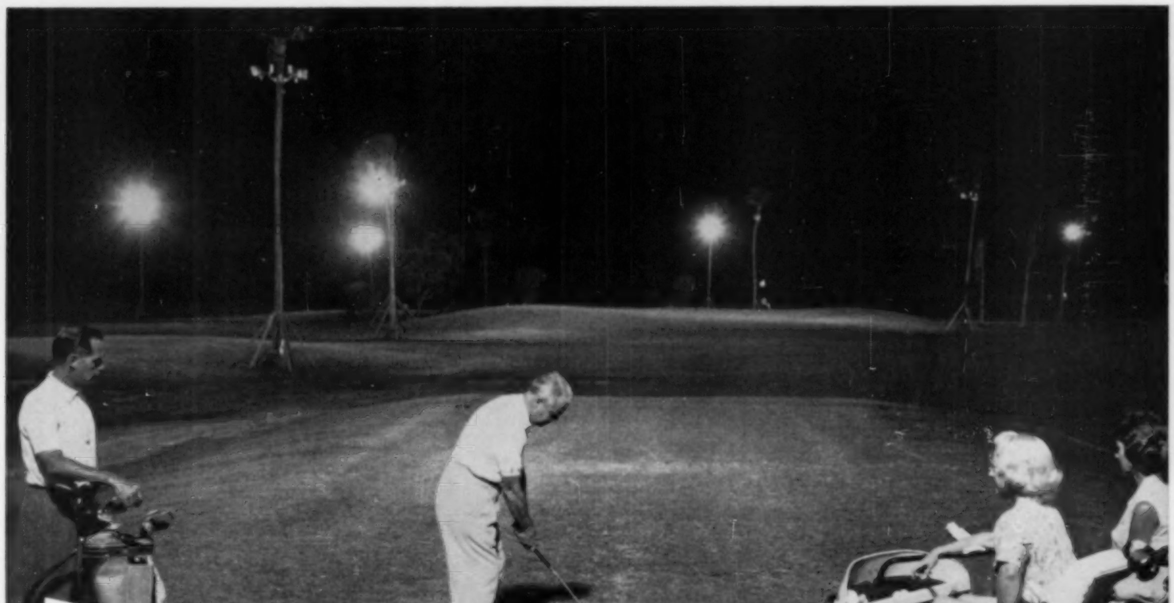
Madison, Wis., has interconnected fixed-time traffic-signal systems on all the arterial streets. Seven controllers in the CBD are progressively timed. These seven will be interconnected in 1961. Twenty-one of the outlying traffic signals are traffic-actuated.

Modesto, Calif., is improving its signal systems both on arterials and in the CBD by installing new poles and larger and more numerous signal heads.

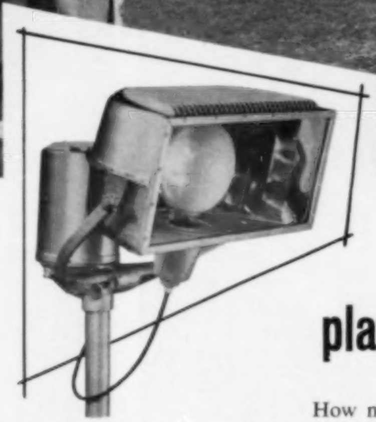
Muskegon, Mich., completed the modernization of its entire traffic-signal system a year ago.

Peoria, Ill., has used the Monotrol system in the CBD for five years.

(Continued on page 129)



Colonial Palms Golf Course, Miami, Florida



Patented

Wouldn't your course get more play if it had WIDE-LITES?

How many of your golfers have to limit their play to weekends because of their office hours? And how many times does dusk keep them from playing the back nine?

There's no *need* for your course revenue to go down with the sun. Wide-Lites make it practical to light a complete 18-hole course, to give extra revenue all through the week. Relieves the week-end congestion at your course, too!

At the course shown above, 123 Wide-Lites mounted on palm trees give so much light that snapshots can be taken with daytime exposures. The 3400-yard par 4 course is so evenly lighted that a top touring pro playing a *night* exhibition match broke the *daylight* record for the course with an eight-under-par 52!

Wide-Lites, with their broad light pattern, give ideal sports lighting, free from annoying shadows or "hot spots." The Wide-Lite saves money, too—its rugged cast aluminum body and tempered glass lens protect the lamp and reflector . . . its mercury vapor lamp lasts 9 to 12 times longer than incandescents . . . power requirements are less.

Think for a moment how much more revenue Wide-Lites could bring to your course—then mail the coupon!

WIDE-LITE

HIGH EFFICIENCY FLOODLIGHTS

In Canada:
Wide-Lite Division,
Wakefield Lighting Limited,
London, Canada

WIDE-LITE CORPORATION Dept. JA111
4114 Gulf Freeway • Houston, Texas

Send more information on Wide-Lites for golf. No obligation, of course.

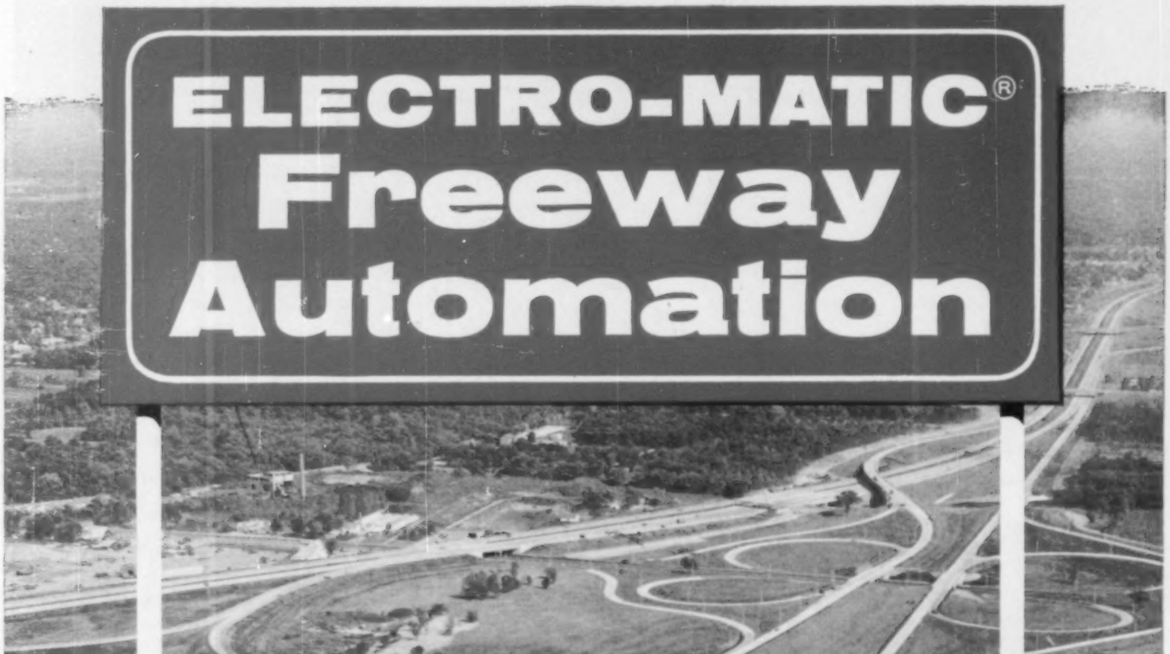
Name____________________

Title____________________

Address____________________

City__________ Zone_____ State________

Get Maximum Production • Service • Safety on Freeways with


ELECTRO-MATIC®
Freeway
Automation
ELECTRO-MATIC CONTROL
TRAFFIC ACTUATED

- Entrance Ramp Control
- Exit Ramp Clearing
- Speed Limit Changing
- Tunnel Ventilation Control
- Lane Control
- Area Control Center Automation
- Surveying and Data Processing

Send for Electro-Matic Freeway Automation Brochure (No. F-101)

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES
NORWALK, CONNECTICUT

A DIVISION OF LABORATORY FOR ELECTRONICS, INC.

(Continued from page 126)

Philadelphia, Pa., controls its CBD by the PR electronic system covering 322 intersections. Similarly, an electronic system controls signals at 70 intersections along Broad Street, the main arterial. This system will be extended as funds become available.

Portland, Ore., has fixed-time control equipment and all multiple-dial equipment is presently interconnected. Also, a large number of single-dial controllers are resynchronized and any actuated equipment that is in or near a fixed-time progressive system is interconnected with the system. Any new installations within or near existing signal systems will be provided with coordinating equipment.

Raleigh, N. C., has coordinated traffic signals on the arteries. More one-way streets will be provided.

Richmond, Va., has tentative plans for a master traffic pattern to tie into the interstate system.

Riverside, Calif., is replacing its entire system downtown with traffic-adjusted PR master control system and local controllers. One system is in operation and the second under construction.

Roanoke, Va., has a two-dial fixed-time coordinated traffic-signal system installed during 1947 to 1952. Traffic increases have already reached the point where early consideration must be given a system in which computing equipment will be used to determine cycle length, progression and other values. Thinking is toward a coordinated fixed or semi-fixed cycle progressive system in the central business district and coordinated traffic-actuated or semi-traffic-actuated controllers on the major arterial feeder routes.

Rockford, Ill., is studying an E.C. Monotrol system for the CBD with telephone-cable interconnection.

Sacramento, Calif., plans to install more flexible equipment both on arterial routes and the central business district.

St. Paul, Minn., in each year's signal program, has devoted substantial funds to the upgrading of existing signal equipment downtown and on outlying arterials. Electronic interconnection such as Automatic's PR or Monotrol has not been installed because multi-dial wire interconnection equipment has proved satisfactory. In addition a large number of actuated signals have been installed.

San Francisco, Calif., will install new master control equipment of fixed-time traffic control for about one third of the city's signalized intersections, located mostly in the central business district. Very little electronic control is contemplated although it is being considered for some main routes.

Sunnyside, Calif., will modernize its traffic-signal system by installing new coordination equipment in the CBD, with the underground on the interconnecting cable already hooked up. The arterials are being equipped and connected.

Trenton, N. J., is replacing the pedestal-type heads with signals on mast arms over the roadway.

Wichita, Kan., is modernizing 94 intersections in the CBD with coordination equipment. ◄◄

Elevator Parking on Biscayne Boulevard

Eleven floors of Miami's second downtown parking garage will be parking decks for 422 cars. Four elevator cabs, with each cab holding three cars at one time, will do the lifting and the patron is to have his car—when he calls for it—in less than 30 seconds.

Since the garage is on Biscayne Boulevard, it will be fully landscaped. Parking revenue instead of tax dollars will operate the garage which has been financed by bonds.

Rader and Associates are the engineers and architects and Ramp Services, Inc., the parking consultants; Bowser System is installing the elevators. ◄◄

These Miami officials breaking ground for the municipally operated Bowser elevator parking garage are Maurey Ashmann, off-street parking board chairman, City Commissioner B. E. Hearn, Mayor Robert King High, and Commissioners Henry Balaban and Joseph X. DuMond, Jr.

2 PARKING GARAGE
FOR THE CITY OF MIAMI FLA.
THE BOWSER PARKING SYSTEM INC.

MONOTUBE POLES in steel or aluminum

. . . engineering and styling to meet today's rigid outdoor lighting requirements

Business District Lighting

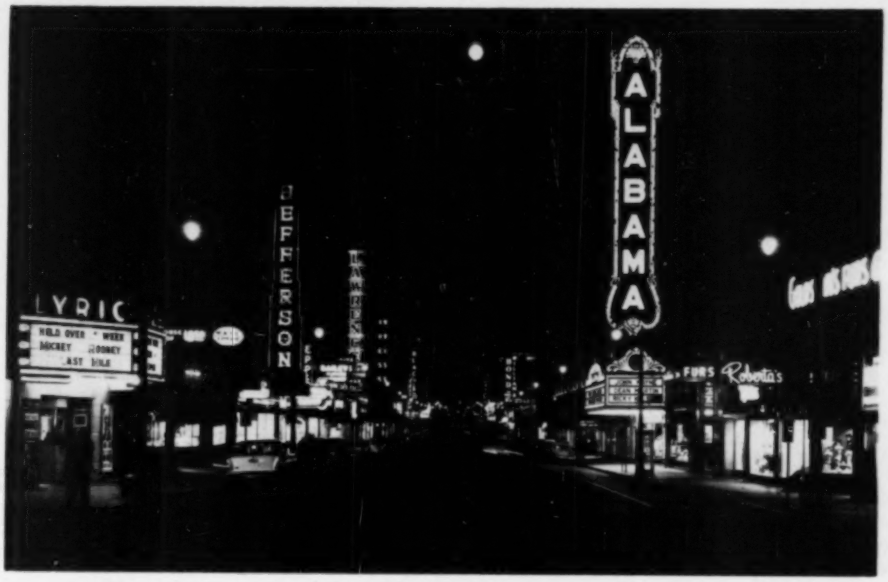
Highway Lighting

Area Lighting

Residential Lighting

UNION METAL

THE UNION METAL MANUFACTURING COMPANY
Canton 5, Ohio Brampton, Ontario
Monotube Engineered Lighting Poles



Before (left) and after (below) on Third Avenue North in Birmingham.

LYRIC
JEFFERSON
ALABAMA
Roberta's

Alabama Towns Get Brighter And Brighter

By A. F. deFUNIAK, II
Division Commercial Sales Supervisor
Alabama Power Co., Birmingham, Ala.

Back in 1930, to walk into a mayor's office and suggest improved street lighting was to invite a definitely cool reception—and reprisals if you attempted to stir up public opinion.

Let me digress for a moment here to say that Alabama Power Co.'s rate reductions in my 27 years of service have brought the average cost of residential electric service down from 5 cents to 1.8 cents per kilowatt hour. Although this fact is little known to the public, the municipal fathers in Alabama are aware of it.

Well, at about this time, one by one our local district managers, our commercial lighting men, our vice-presidents called on the city fathers of little towns and big towns, suggesting a blue print for the future; an objective to work towards—emphasizing that we would not push the program, go to the newspapers or stir up public sentiment.

We suggested that they could greatly improve their city's economy by successfully advocating improved lighting. We pointed out that better business always followed bright streets. We noted that crime was reduced and that a smaller police force could patrol lighted areas. Fewer auto accidents helped to keep the insurance rates down. A few accepted these premises and added footcandles in their business districts; then a few more; then when revenues did increase they came to us for advice on how and where to add more street lights.

In 1935 the City of Birmingham paid us approximately $99,800 per year. In 1940 this had grown to $107,200. In 1950 the annual street lighting was $169,000 and this year the city has budgeted $266,521, an increase of 267% in 25 years for more light.

(Continued on page 132)

(Continued from page 131)

For example, Birmingham in 1959 had 995 white-way units using 6,000- and 10,000-lumen incandescent lamps, with only the intersection units on all-night burning. Over two years had elapsed since we had submitted a proposal to convert these units to 20,000-lumen mercury lamps on all-night burning. At that time the three commissioners said there was simply no money for this purpose.

But early in 1959 a newly formed organization, the Birmingham Downtown Improvement Association decided that modern street lighting was a "must" in their program. They approached us and we made it clear that we would be happy to serve but that under no conditions would we *push* for the improvement.

A month later the mayor called us in for consultation. Arrangements were made to try out four 20,000-lumen color-corrected lamps on a back street. The city was happy with the results.

Over the past several years, by changing from 1,000-lumen to 2,500-lumen, by changing from half-night to all-night burning, by changing to an overhead-per-foot circuit charge, we have changed eight municipalities to a better rate. In each of these cases we have increased their lighting considerably more than we have their billing. For example, the mayor of Birmingham asked us for a proposal—which we gave to him—which would increase the city's lumen output some 6,700,000 or 14.9% at an increase of only $10,198 or 3.9% of their billing.

I have only used the example of Birmingham, Alabama's largest city, because I am more familiar with it. But the same pattern holds true all over the state—in cities of 100,000, 40,000, 20,000 and towns that have only a few hundred.

For example in Montgomery, the state capital, with a population of only 135,000 there are 1,600 20,000-lumen mercury vapor units installed in its downtown system and on all main thoroughfares throughout the city.

In Mobile an organization known as "Downtown Mobile Unlimited" and the Central Business District Committee of the Chamber of Commerce were asked by the city for recommendations for downtown improvements necessary to help cope with the suburban-shopping-center threat. Both organizations' recommendation was for a modern downtown white-way system. The contract has been let for installation of 338 new 32-foot-mounting-height aluminum poles with 20,000-lumen color-corrected mercury, and the City of Mobile has approved $350,000 for the cost of this new system.

One of the first things a newly incorporated town does after organizing a police and fire department is to ask Alabama Power to send someone to talk about street lighting.

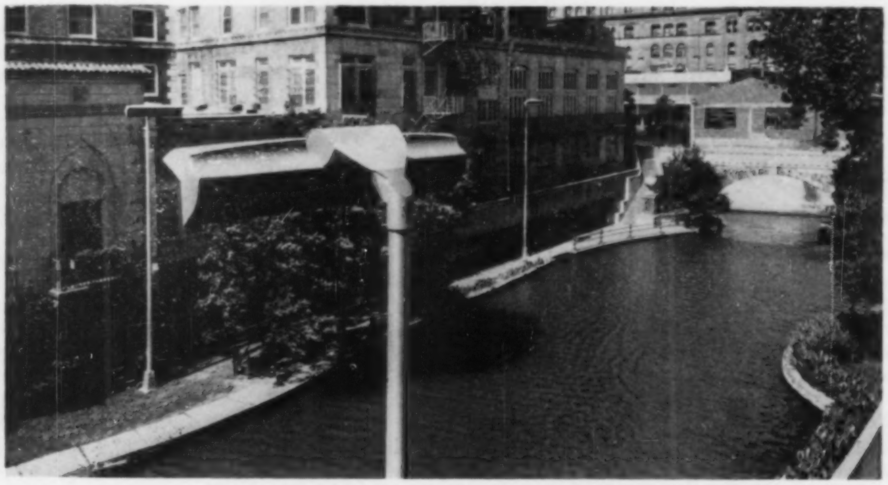
Is it profitable? Well, we think it is, in goodwill with the people that live in and run Alabama. We believe that as a result of our street-lighting policies we enjoy the finest relations with our city fathers. We have very little difficulty with franchises and other actions. We believe it is our civic obligation to see that street lighting is always available and at its best—if it is at all possible. Here are the statistics. In the Alabama Power Co.'s service area we have at present:

46,500 incandescent street lamps
3,100 mercury vapor street lamps
KWH sales in 1959—46,829,950
Revenue in 1959—$1,085,245
Average revenue per lamp—incandescent—$19.80
Average revenue per lamp—mercury—$72.00
Average maintenance cost per lamp—$1.76. ◄◄

San Antonio's Aorta

San Antonio, Texas, has lighted the beautiful San Antonio River, which winds its way through the heart of the city.

Well landscaped banks and graceful bridges made the river one of the city's daytime attractions, but its beauty was lost at night. The City Public Service Board installed Mainstreeter luminaires. The Westinghouse Electric Corp.'s refractor-type outdoor fluorescent lighting fixtures shine along both sides of the stream, as a "full-time" tourist attraction. ◄◄



Fluorescent lights brighten the heart of San Antonio.

L-M's POST TOP LUMINAIRES provide a low-cost means of converting old, inefficient lighting systems. A two man crew averaged less than 8 minutes per standard in converting this residential area.

L-M's Smart New Post Top Luminaires Make Attractive, Low-Cost Conversions

Line Material's new PTL offers the latest in design, appearance, and efficient illumination for the economical conversion of any post top lighting system.

The new L-M PTL (Post Top Luminaire) combines modern design with a highly efficient optical system, to provide the very latest in post top fixtures. With a minimum of cost you can adapt most existing standards to a charming modern installation with greatly increased lighting levels. Most standards can be modernized by direct replacement with a PTL at a cost comparable to the replacement parts for two old-fashioned ornamental glass globe and canopy combinations.

The PTL combines a rigid spun-aluminum reflector, an efficient Holophane® refractor, and a sturdy aluminum mounting base. The reflector swings open on a hinge for easy cleaning and for easy replacement of lamps and ballasts.

The combination of reflector and refractor directs all the light down to the surface of the ground. Light cannot shine up and be lost in the sky—no shades will be necessary to block unwanted light from adjacent areas. Lighting levels are automatically increased when PTL's are installed, without increasing lamp size.

Reflectors and base come in natural brushed aluminum or a choice of pastel colors. Available with photo control, to automatically turn light on at dusk and off at dawn. They will accommodate lamps up to 10,000 lumens, or 620 watts multiple; or with ballast in the fixture for mercury vapor lamps up to 250 watts. A choice of five IES light patterns is available; types I, II, III, II 4-way, and V.

You can install PTL's in streets, parks, or any other public areas where beauty and lighting need improving. Try a few in a test area. You'll be surprised at the difference they will make.

Get Complete Information

Be sure you get complete information on the ease and low cost of converting your present post top lighting to the modern efficient PTL. Contact an L-M Lighting Engineer or write direct to Line Material Industries, Milwaukee 1, Wisconsin. In Canada: CLM Industries, Division of McGraw-Edison Company (Canada) Ltd., Toronto 13, Canada.

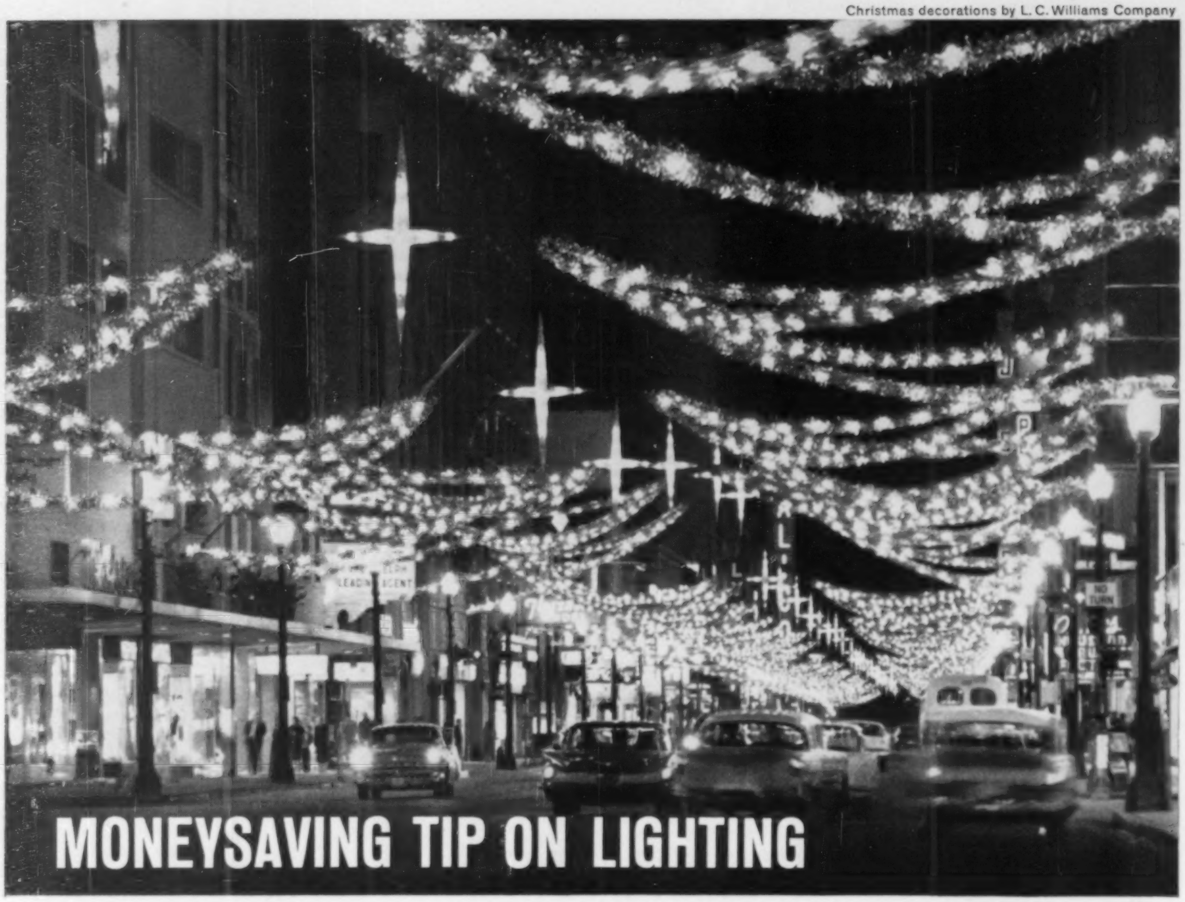
REPLACEMENT is simple and fast in most instances. The old fixture is removed and the attractive PTL is mounted directly in its place with its own set screws.

LINE MATERIAL® Industries Outdoor Lighting

McGRAW-EDISON COMPANY

DISTRIBUTION TRANSFORMERS • RECLOSERS AND OIL SWITCHES • FUSE CUTOUTS AND FUSE LINKS • LIGHTNING ARRESTERS
POWER SWITCHING EQUIPMENT • PACKAGED SUBSTATIONS • CAPACITORS • REGULATORS • OUTDOOR LIGHTING
LINE CONSTRUCTION MATERIALS • PORCELAIN INSULATORS • FIBRE PIPE AND CONDUIT

McGRAW EDISON



Christmas decorations by L. C. Williams Company

MONEYSAVING TIP ON LIGHTING

from the man who makes street decorations

Relamping is easier, much more efficient, when you choose from the Sylvania line. You quickly get exactly what you want—anything from 25-watt colored incandescents to 1000-watt Mercury Lamps.

This is just one reason why L. C. Williams Company of Houston, Texas—the largest maker of street decorations—uses Sylvania exclusively.

Another reason: throughout this vast line, Sylvania lamps are *unsurpassed* for the amount of light they give. They actually *lower* your Total Cost of Lighting (which means cost of lamps plus power plus maintenance). And Sylvania backs this surprising claim with an exclusive money-back guarantee:

"Sylvania Incandescent Lamps are guaranteed to meet or exceed Sylvania's Published Incandescent Lamp Ratings and the Lamp Specifications of the U. S. Government as measured by the U. S. Bureau of Standards. If any Sylvania Incandescent lamps do not live up to this standard of performance, the lamps may be returned to the supplier for a full refund of the purchase price."

Plan now to save even more by relamping other street lights at the same time you put up decorations. And to be sure everything's on hand the day you're ready to go, see your Sylvania representative now . . . or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

Certified Performance Policy
Incandescent Lamps
SYLVANIA

With 6,000 different kinds of lamps

SYLVANIA LIGHTS THE WAY

SYLVANIA

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

Cleveland's Square Is a Super-Moon

More than 100 fluorescent luminaires make Cleveland's Public Square 225 times as bright as it would be in full moonlight.

The site of the world's initial modern street-lighting installation, Cleveland Public Square, Cleveland, Ohio, has its first new lighting in 32 years. The original electric brilliance was turned on April 29, 1879. It has now been lighted to 225 times the brightness of a full moon by more than 100 General Electric six-foot fluorescent luminaires.

On inspecting the new installation, Mayor Anthony J. Celebrezze called it an important step to redevelop and improve the downtown area. He said that new lighting will serve to remind Greater Cleveland citizens and visitors of Cleveland's heritage in the lighting world. "Cleveland was a pioneer with street lighting in 1879 and remains one of its foremost exponents today," the mayor said.

That long-ago first installation consisted of a dozen lamps in opalescent globes mounted atop 150-foot poles. Newspapers reported that "a dazzling glory filled the park, crowds being present to witness the practical demonstration of a scientific victory."

The square was relighted in November 1928 with filament units. For the present installation, there are 25-foot poles raised with metal extensions and six-foot four-lamp Power Groove luminaires mounted 30 feet above the roadway. Each luminaire contains four G-E power-groove fluorescent lamps on poles 55 to 60 feet apart.

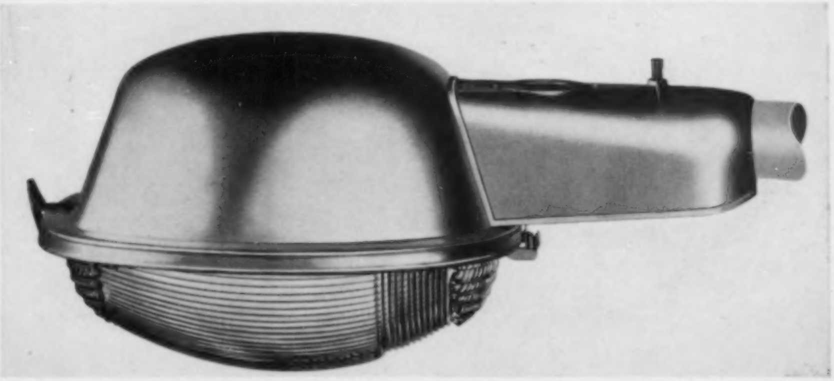
Vincent M. DeMelto, Commissioner of the Division of Light and Power, said: "Our lighting units had become so old that the maintenance costs were extremely high. The new units deliver three and a half times the light per watt and deliver the light down where we want it, instead of spraying it into the sky and against walls of the buildings. And these fluorescent luminaires constitute an attractive addition to the square—day and night."

In addition to the 102 luminaires installed on the square, the city purchased ten additional units for installation on adjacent Ontario Street. Each unit delivers 43,600 lumens of light, producing in the Public Square a footcandle level of 4.5.

Cleveland's municipal light plant, which finances, installs and maintains more than half of the street lights in Cleveland, completed this project. ◄◄

Mercury Luminaire for Secondary Streets

"Urbanoval" is the name given to an end-mounting street lighting luminaire for residential areas where uniform, low-level lighting is desired. It accommodates 100, 175, or 250-watt mercury lamps or incandescent lamps up to 4,000 lumens. A choice of two Revere-Corning Pyrex refractors provides Type II or Type III or four-way distribution. It is made by the Revere Electric Mfg. Co., 7420 Lehigh Ave., Chicago 48, Ill. ◄◄



New

CROUSE/HINDS

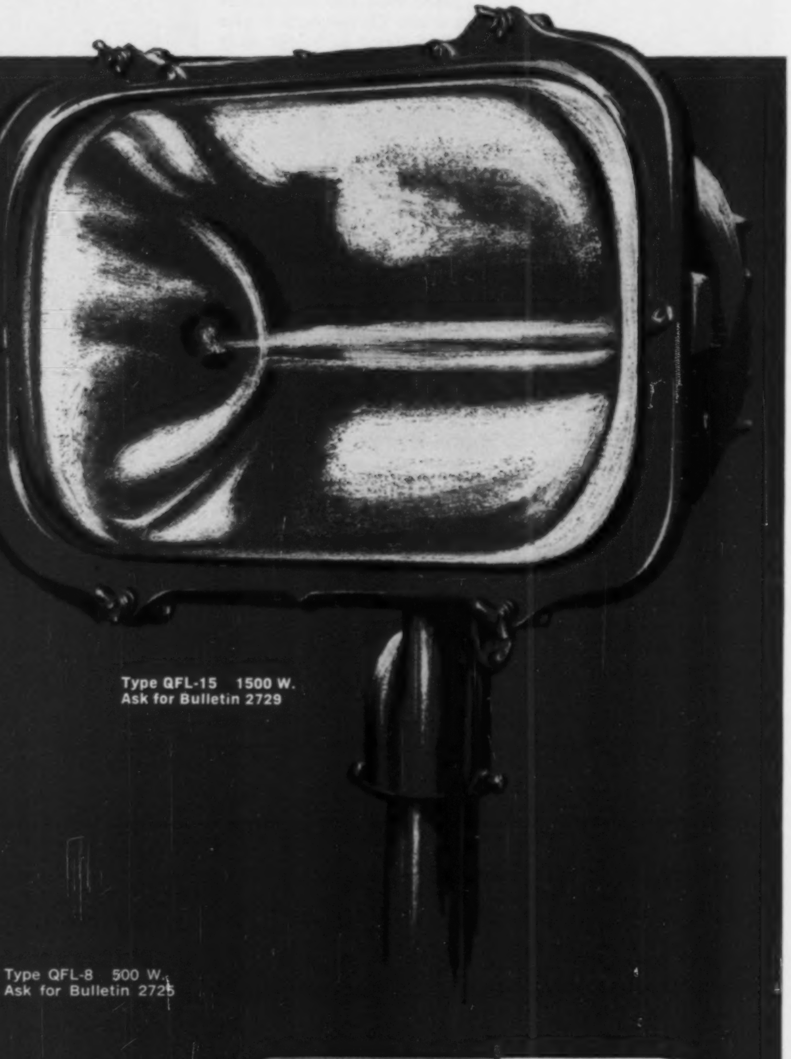
QUARTZ-beam®
FLOODLIGHT

Designed to maintain operating position and thermal level essential for proper self-cleaning of iodine-cycle lamps, QUARTZ-beam QFL-15 projects per-unit-area maximum of lamp's 33,000 lumen output. Provides constant unfading output of clean, white light, with candlepowers up to 200,000, and an average lamp life of 2,000 hours.

Three beam spreads available, with minimum vertical angle as narrow as 13°. Reflector is one piece die-formed, polished or etched. Cast aluminum door and housing sealed by silicone rubber gasket. Heat and impact resisting lens. Door locks tightly and releases quickly by means of 4 wing-nut clamps.

External raintight fuseholder (with fuse). Aiming and leveling device, exterior focusing screws included. Trunnion or slip fitter mounting. Hood, louvers and special mounting bases available. Get further information from your Crouse-Hinds distributor.

concentrates in sharp rectangular patterns the high-lumen output of 1500 watt Quartz-Iodine lamps



Type QFL-15 1500 W.
Ask for Bulletin 2729

Type QFL-8 500 W.
Ask for Bulletin 2725

CROUSE/HINDS
SYRACUSE NEW YORK

OFFICES: Atlanta Baton Rouge Birmingham Boston Buffalo Charlotte Chicago Cincinnati Cleveland Corpus Christi Dallas Denver Detroit Houston Indianapolis Kansas City Los Angeles Milwaukee New Orleans New York Omaha Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul Salt Lake City San Francisco Seattle Tampa Tulsa Washington
RESIDENT REPRESENTATIVES: Albany, N.Y., Baltimore, Md., New Haven, Conn., Reading, Pa., Richmond, Va.
Crouse-Hinds of Canada, Ltd., Toronto, Ont. Crouse-Hinds-Domex, S.A. de C.V. Mexico City, D.F. Peterco, Sao Paulo, Brazil

Hapco aluminum standards along the Capitol Way in the residential area of Olympia.

Olympians Pleased with Aluminum Standards

On July 24, 1956, the City of Olympia, Wash., accepted an installation of 21,000-lumen mercury-vapor street-lighting units. These 318 units were mounted on 28½-foot standards furnished by the Hubbard Aluminum Products Co., of Pittsburgh, Pa. All poles were aluminum with mast arms of varying lengths. The choice of these aluminum standards was considered to be of paramount importance.

Olympia is situated at the extreme southern extremity of Puget Sound bordering on salt water. Fumes from lumber manufacturing added to our corrosion problem. Painting steel poles was expensive. Numerous steel poles had also succumbed to traffic accidents and it had been found that replacement-parts cost was high. After four years of service, the aluminum standards show no deterioration caused by corrosion.

Since this original installation, the street-lighting system has been greatly extended, using aluminum standards and pedestals and strain poles for traffic-signal purposes. Mayor Amanda Smith described her city's complete lighting system in, "When Is It Night in Olympia, Wash.?" in THE AMERICAN CITY for May 1957.

CHESTER M. KIRSOP
City Electrician & Traffic Engineer
Olympia, Wash.

Kids Keep On Playing at Night

After a survey of the lighting of the village of Tarrytown, N. Y., by Trustee Raymond Calore, its street and highway committee chairman, plans for lighting six areas were drawn up with the aid of Consolidated Edison. Three have been completed: the main street, Patriots' Park, and Franklin Courts.

The community installed a half-dozen mercury luminaires in Patriots' Park, a teenage gathering spot, protecting both its youngsters and the village property.

Franklin Courts, an apartment-house project near the river, teems with young bike-riders and roller-skaters. The new lighting, installed along the development's roadway, consists of a half-dozen 7,000-lumen General Electric mercury-vapor luminaires, with automatic photo-electric controls. The lights are spaced 130 feet apart at a height of 23 feet. ◄◄

At night children in Franklin Courts in Tarrytown are safe as they play beneath the new mercury-vapor luminaires.

First from General Electric (1959)...another bright idea
that became a better lamp for you

G-E All-Weather Fluorescents shine brighter when mercury drops

Mister Magoo says . . . "1959? A chilly year! Alaska joined the Union, and General Electric invented the All-Weather fluorescent. Happy birthday, All-Weather. Humph! Packaging experts! Who needs a wrapper on a pool cue?"

Happy
2nd
Birth-Day

DON'T drop your cue, Mister Magoo. It's a specially jacketed All-Weather lamp, another first chalked up by General Electric.

It wears that glass jacket to ward off winter wind and cold. Below freezing, it's the most powerful fluorescent lamp you can buy.

General Electric developed this lamp because ordinary fluorescents grow dim when the temperature dives toward zero. Often they lose 90% or more of their warm-weather light output. But the All-Weather fluorescent T10J—a G-E exclusive—grows brighter the colder it gets! Use it where temperatures sometimes drop below 50°F.

You can use the T10J—or its companion lamp (T10) without the "storm window"—indoors or out. Examples: walk-in freezers, shopping centers, drive-ins, parking lots, street lamps, store fronts, airports, docks, signs, gas stations.

Both come in 4′, 6′, and 8′ lengths. Ask your G-E distributor to show you these two exclusive examples of General Electric lighting leadership. General Electric Co., Large Lamp Dept. C-111, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL ELECTRIC

©UPA
PICTURES, INC.

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal
Public
Relations

A five-year information effort builds interest

Ames Reminds Its People That "City Business Is Your Business"

Ames, Iowa, has a three-pronged (information, education, promotion) public-relations program that goes on year-round. It is directed by Municipal Public Relationist Gladys Meads, working under City Manager John M. Carpenter. MPR goals, as expressed by Mrs. Meads, are "to tell our citizens the truth and not to propagandize; to solicit public opinion and citizen assistance, yet to lead in crystalizing those opinions in constructive uses."

Newsletter

The primary, and long-established, way Ames explains and publicizes council action is via a quarterly publication, "Key to the City." "Five years of factual reporting by this method," Mrs. Meads says, "has aroused continued interest in the city's business." Four times a year, 5,500 copies are mailed to all business firms and residences. The city's cost is just 4.4 cents a copy.

A review of the four issues published in one year (1960) indicates the variety of information offered. January featured "giant steps" in the previous year and a calendar of civic activities and meetings in the year ahead. April covered finances, comparing Ame's expenditures with those of other Iowa cities. There was also an explanation of how taxes are determined and what the average taxpayer must pay.

July covered current events in all departments and discussed budget divisions to prepare for the presentation of the budget in August. October's edition told how "the wheels of your city turn for you."

In addition to these features, each issue profiles a city hall official or employee and editorializes under title of "Thru the Keyhole."

While the quarterly publication is a backbone of the Ames public-relations program, the city uses other techniques too.

Press releases are issued, for example (1960) on budgets, utility expansion, paving, police and parking programs, hospital, the census, reappraisal information, safety, fire and sanitation, new city services, 40th anniversary celebration of city manager form of government in Ames, and the annual "Key" award by the city.

New arrival news is a modest item costing a very modest 6 mills per copy! Ingeniously folded from an 8½-by-11-inch paper, it carries answers to new residents, questions and a column, "where to find out more" with addresses and phone numbers. There is a city organization chart, phone listings for service calls and emergency calls.

City broadcasts are carried weekly over station KASI, Tuesdays, at 10:45 a.m.

Colored slide program, about city operations, is available. Bookings are made through the MPR office.

Directory of city officials is printed biennially and kept up to date. This is a listing of every city board or commission with the names of members.

Information publications (1960) included a multi-colored folder, "Ames has parking space—with an eye on your parking comfort." Color-coordinated parking meters (poles painted silver cost 1 cent and 5 cents, have a one-hour limit, poles painted orange take only 1 cent and there's a 12-minute limit, etc.) are mapped and explained. Free parking spaces are also shown.

A second folder, "Here Comes That Man Again" introduces, via

(Continued on page 141)

People in Ames are interested in city business after five years of constant and thorough information and promotion. The subject that brought this crowd to the city council meeting was annexation.

In BUENA VISTA, VIRGINIA

TYLOX®

Rubber

PIPE GASKETS

- √ REDUCE PIPE-LAYING COSTS
- √ MAKE WATER-TIGHT JOINTS
- √ WHIP ACID ATTACK

Coupling TYLOX-Gasketed pipe is as fast as the few seconds required to shove pipe home into the line. Mud and water, as shown here does not slow up the work, or affect the compression seal.

Here's how . . .

TYLOX Gaskets "snap on" to pipe tongues in seconds . . . merely shoving the pipe home completes the joint. Being *flexible*, TYLOX compensates for pipe angularities, mud and water doesn't slow up coupling work, and laid line can be backfilled immediately. Construction costs are substantially reduced.

TYLOX Gaskets have seven sealing ribs that "pack" the annular space tight as pipe is coupled. A true *compression*, yet flexible seal is formed which prevents leakage of water *in* or *out* of the joints. Natural resilience of the TYLOX rubber keeps the seal water-tight. Root and sediment problems are prevented, and sewage treatment costs are reduced.

TYLOX Gaskets are made of rubber specially compounded for immunity to sewage and industrial waste acids and alkalies. Under ground and under compression, they outlast the life of the pipe itself.

SEND FOR ENGINEERING DATA AND ILLUSTRATED CASE HISTORIES ON TYLOX RUBBER PIPE GASKETS

* **PROJECT:** City of Buena Vista, Va., trunk line to sewage treatment plant.

ENGINEERS: R. Stuart Royer & Associates, Richmond, Va.

CONTRACTOR: English Construction Co., Alta Vista, Va.

PIPE: TYLOX-coupled T & G in 15" to 24" diameters, manufactured by Roanoke Concrete Products Co., Inc., Roanoke, Va.

5123-3

HAMILTON KENT
MANUFACTURING COMPANY
KENT, OHIO
427 West Grant Street **Orchard 3-9555**

NORTHWEST: Seattle 1, Wash., MUtual 2-7667 • CANADA: Cooksville, Ont., ATwater 9-3671

(Continued from page 139)

photo, the city's six meter men and tells "his work requires him to enter your home." Citizens are told that they should ask the meter man for his identification card if they have any doubts about his identity. They are invited to comment on the meter man and his service.

A third publication answers the question, "What can I, a citizen of Ames, do about Dutch Elm disease." The disease, its effect, what the city is doing about it and what the citizen must do are discussed. The booklet was prepared by the MPR office under technical direction of the Ames Dutch Elm Disease Committee. The drawings were prepared by a local artist as a free service to the community.

The municipal public relationist planned, stage-managed, and publicized the following promotions during the year:

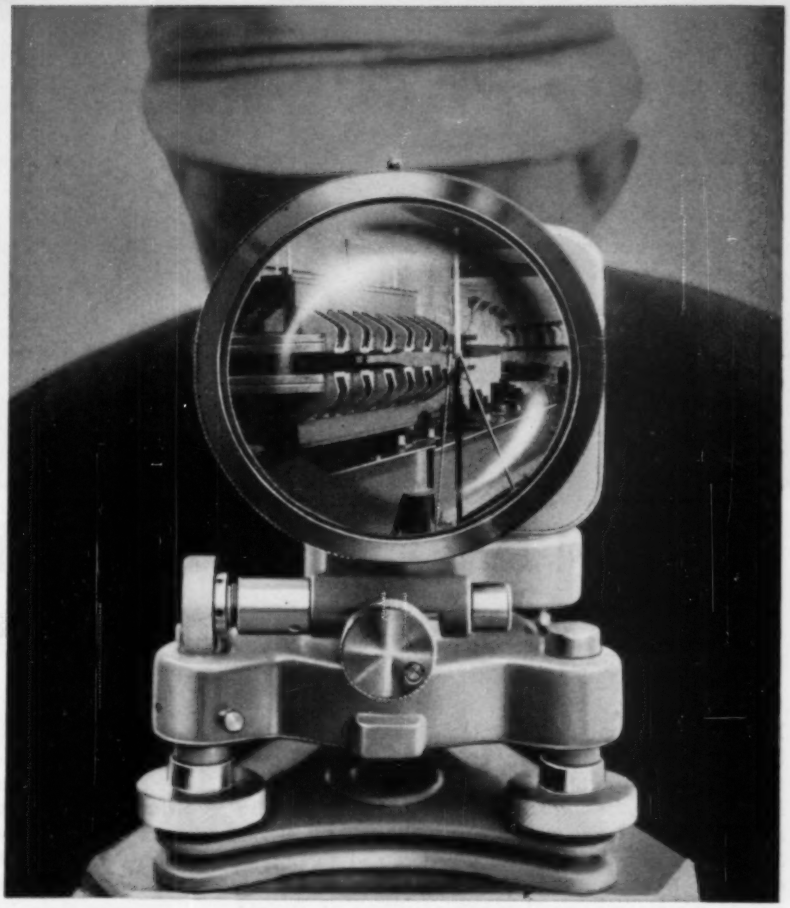
Sewage Plant Open House, on its tenth anniversary, was a ten-day affair open to all citizens. A free bag of fertilizer for lawns was a gift to each family.

40th Birthday Dinner for the city-manager form of government in Ames attended by 150 city officials and their wives. The program included a review of city-manager government, progress in the city during the last 40 years, recognition of persons who served the city for 30 or more years, and a half-hour musical by professional entertainment on a local theme.

Key-to-the-City Awards, originated by Mrs. Meads, made annually by the city in recognition of unselfish work for the community. Nominations are made by organizations or individuals. The winner is presented a small key to wear and a plaque with key and inscription to hang on the wall. Presentation is made at a city council meeting. Announcement of the recipient is featured (cover photo and story) in the April quarterly report each year.

Business Education Day is a city-wide event for teachers and educators. City hall's part in the day is a program aimed at acquainting teachers with city operations and services. Participants were given an inexpensive but informative folder containing basic information about the city, a map of the city, and the program for the day.

A copyable idea from the folder was one sheet on "How Public Schools Can Help." It lists city information aids (slides, publications, the broadcast) and invites teachers to use these. ◄◄



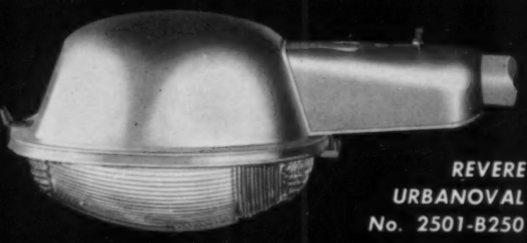
TODAY'S MOST PRECISE LEVELING INSTRUMENT for field, industrial and engineering requirements. Indispensable for structural settlement and load studies...for jig and fixture alignment...for setting turbines, generators and other heavy machinery, and all first order leveling. The WILD N-3 is dependable, rugged, easy to set up and use. Models for reading direct to .1 mm; .001"; .0005'. All have tilting screw, coincidence level and built-in optical micrometer.

WILD
HEERBRUGG

WILD N-3 HIGH PRECISION LEVEL
One of a *complete* line of superb instruments for Surveying, Photogrammetry and Microscopy. *Write for Booklet N-3.*

WILD HEERBRUGG INSTRUMENTS, INC. • PORT WASHINGTON, NEW YORK
In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

REVERE
UNITIZED URBANOVAL
No. 2531-B175



REVERE
URBANOVAL
No. 2501-B250

New Revere 2500 Series Urbanoval luminaires use 100, 175 or 250-watt mercury lamps. Unitized Urbanoval features built-in constant-wattage or reactor ballasts. Conventional Urbanoval is designed for external ballasting. Both types are available with or without mounting adapter for E.E.I.-NEMA standard plug-in locking-type photo-electric control. Choice of Revere-Corning Pyrex® molded prismatic refractors provides I.E.S. Type II or Type II—4-way distribution (or Type III or 4-way with phosphor-coated lamps). Available with 1¼" or 2" slipfitter.

NEW FAMILY OF REVERE LUMINAIRES

New *unitized* oval mercury luminaires with built-in ballast components are the latest addition to the Revere family of street lighting equipment. New 2600 Series Endoval luminaires provide high-level, glare-free illumination for arterial streets and highways. New 2500 Series Urbanoval luminaires are designed to provide economical lighting for residential areas or secondary streets where uniform, low-level lighting is desired. Both series offer the advantages of modern styling, substantially reduced installation costs, and efficient, economical performance.

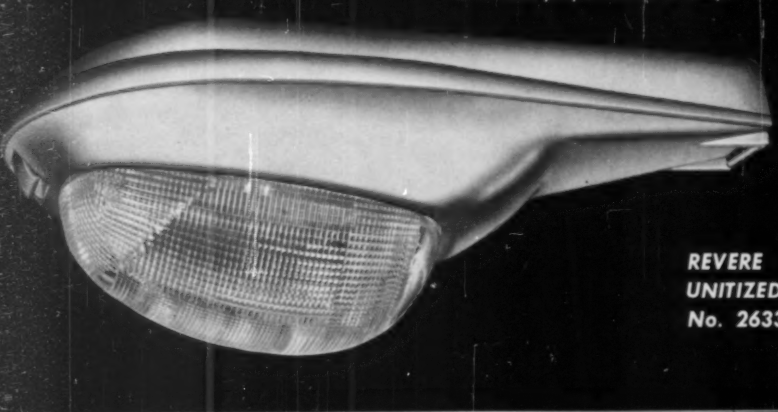
Revere's new unitized luminaires together with newly designed conventional luminaires let you solve every street and highway application problem the one *best* way. You can select high quality, design-matched Revere luminaires, poles and equipment specially engineered for every street lighting need. *Send for complete catalog information and technical data.*

Revere
ELECTRIC MFG. CO.®

OUTDOOR LIGHTING

Revere Electric Mfg. Co. • 7420 Lehigh Avenue • Chicago 48, Illinois (In suburban Niles)
Long Distance Phone: NIles 7-6060 • Chicago Phone: SPring 4-1200 • Telegrams: WUX Niles

New Revere 2600 Series Endoval luminaires use 250 or 400-watt mercury lamps. Unitized Endoval features built-in constant-wattage or reactor ballasts. Conventional Endoval employs same housing, reflector and Revere-Corning Pyrex® molded prismatic refractor, but without built-in ballast components. Both types are available with or without mounting adapter for E.E.I.-NEMA standard plug-in locking-type photo-electric control. Adjustable socket positions produce A.S.A.-I.E.S. Types II, III, or IV with proper choice of lamp.



REVERE
UNITIZED ENDOVAL
No. 2633-B400

How Phoenix Makes 12,000 Purchases

. . . and insures fairness to all vendors while making purchases in the best interests of all the taxpayers

By **BERT A. GRAGG**
City Purchasing Agent

In an average year the Division of Purchases and Stores in Phoenix, Ariz., issues about 12,000 purchase orders valued at several millions of dollars. Because of the substantial amount of public money involved the division is guided by several established policies:

- **To conduct all purchasing in accordance with federal and state laws and city ordinances.**
- **To obtain the required quantity and quality of materials and have them at the right place at the right time.**
- **To promote competitive bidding.**
- **To treat all vendors equally.**

The division must purchase supplies needed to provide police and fire protection, supply and purify water, maintain streets, collect and dispose of refuse, collect and treat sewage, maintain park and recreational facilities and operate an airport. This requires a great variety of equipment, supplies, and services.

It is important to both the vendor and the city that every product or service be introduced to personnel in the division of purchases and stores, headed by the city purchasing agent. Office hours for salesmen are 1:30 to 4:30 p.m., Monday through Friday.

Bert A. Gragg

All purchases result from one of the following procedures:

1. **Petty cash—purchases under $5.**
2. **Telphone quotations — purchases under $100.**
3. **Informal written quotations—purchases between $100 and $500.**
4. **Formal sealed bids—purchases over $500.**

We confirm all purchases, other than petty cash, by a formal purchase order.

On all purchases costing more than $500, the city inserts legal advertising in the Arizona Weekly Gazette to satisfy the requirements of law.

In addition, the division of purchases and stores mails copies of the call for bids and complete specifications to each of the firms on the vendor list, and additions to the list are always welcome. The division also mails copies of the call for bids and complete specifications to all others who are interested in order to obtain as many bids as possible. The purchasing agent and the finance director recommend to the City Council the bid which meets specifications and which is in the best interests of the city. The City Council makes all awards on sealed bids where the successful bid is over $500.

The $500 limit is the point at which the city must request formal bids; under the charter only the City Council can accept such bids.

Since 1950, it has been the city's policy to ask for formal bids on as much of its purchases as it is possible. We frequently combine quantities of low-unit-cost items in order to buy more than $500 at one time. This extends the use of formal procedures beyond the exact letter of the law. Such extension, however, is very much in accord with the spirit of the law. We feel that this procedure has resulted in substantial savings over the years. All vendors have their day in open council meeting, as a matter of routine, and the council itself makes the decision.

The key to its success has been the

(Continued on page 144)

?Pavement Marking Problems?

- STOP DOWN TIME
- INCREASE EFFICIENCY
- MORE LINE MILES PER DAY WITH

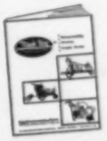
Mark-Rite

MODEL 9000
Self-propelled
LINE MARKER

Pays Its Own Way

Users of the Mark-Rite Model 9,000 one man operated Line Marker report that it lays 25% to 50% more line per day than other machines.

NOW! **Model 9000, self-propelled Mark-Rite Line Marker . . . MEETS NEW FEDERAL SPECIFICATIONS for 2-color street markings . . . the 9000 is BUILT for TWO TANKS, no extra tank need be tied behind! MARK-RITE Units sold as long as ten years ago, TODAY meet Federal Specs . . . another sign of our advanced engineering.**
16 years, 45,000 units—Experience insures your receiving the very best.



FOR COMPLETE SPECIFICATIONS WRITE FOR THIS 16-PAGE CATALOG TODAY . . . Tells how to select the proper Line Marker for your Job.

Unimasco, Inc.
424 West Redondo Beach Blvd.
Gardena, California
FAculty 1-3322

In Canada:
Plant Maintenance Equipment, Ltd.
Vancouver, Toronto, Montreal

(Continued from page 143)

care in drawing specifications. The specifications are open, rule out inferior equipment, and the low bid is accepted. Bids on alternates equal to the specifications are invited to guard against inadvertently ruling out good material on a technicality. The council can then accept the low bid meeting specifications, or the alternate, if truly equal and lower than the base bid.

The purchasing staff feels the need for more flexibility only in case of a true emergency. Perhaps the charter should some day be amended to allow purchases up to $2,500 without formal bid in case of an emergency caused by an act of God or some other physical accident. The council could be empowered to authorize an emergency purchase above this amount up to say $5,000 or $10,000. Otherwise, we feel this $500 limit produces excellent public relations and provides strong safeguards against squandering public money.

All bids must include all taxes that are applicable to the city. The city ½% privilege license tax and federal excise taxes do not apply to these sales and must be excluded. Resident Arizona vendors are responsible for the 3% state sales tax (Arizona transaction privilege tax).

An out-of-state vendor may include the 3% Arizona use tax provided that all of the following apply:

- **The use tax is applicable.**
- **The vendor has an Arizona use-tax-act collection certificate.**
- **A sales or use tax on the transaction is not being paid to any state other than Arizona.**
- **The city is notified on the bid forms and as otherwise required by the state use tax law.**

Vendors must always state the number of days required to deliver a product on which they are bidding. This may be one of the most important points to a department requisitioning a product and may be important in awarding an order.

Vendors must specify any terms which they wish to grant. In a competitive market the offering of a discount for prompt payment is often decisive. Cash discounts allowed are always deducted from the base bid in determining the low bidder.

An official city purchase order must accompany all purchases involving more than $5. The original copy of the purchase order, mailed to the vendor, serves as the authorization to provide the goods or services. It also serves as his billing and file copy. Even telephone quotations to a city buyer require these orders. However, to expedite delivery, the city buyer will often give the vendor the purchase order number over the telephone.

Bid openings are at City Hall on Mondays at 3.00 p.m. The bid form indicates which Monday is the deadline. Bidders do not have to attend but those who wish to do so are welcome. The bid opening date for a specific item is always listed in the official advertising.

The purchasing agent presides over these openings with representatives of the city manager and the city clerk in attendance. All bids are read aloud and are available for inspection.

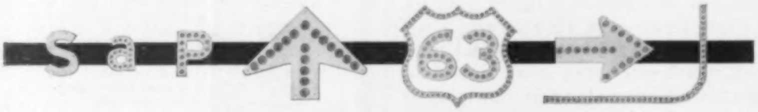
One of the most important factors in determining what the city buys is the quality requirements of the using departments and divisions. This quality requirement is not necessarily the best nor the cheapest of a particular commodity. The city determines quality by need—that is, items that are felt to be both economical and the best suited for the

(Continued on page 147)

INTERSTATE
COLORADO
80
S
WEST
WIGGIN

MIRO-FLEX CUTOUTS
make sign-assembly to specifications easy and economical!

Pre-cut aluminum numbers, letters, arrows, shapes, corners, and borders, put a full line of signing materials at your fingertips in shop or on-site. You can now make signs to interstate specifications easily and economically. Furnished plain or with choice of plastic lenses, reflective sheeting or unfinished. Years of leadership in sign manufacturing is your guarantee of uncompromised quality. Send for your free catalog of MIRO-FLEX individual cutouts. Design recommended by ASSHO and approved by the Bureau of Public Roads.



THE **MIRO-FLEX** CO., INC.

MS-1161 **1824 E. SECOND ST. • WICHITA 14, KANSAS**

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

TRAFFIC FINES PAID "ON THE SPOT"

WITH

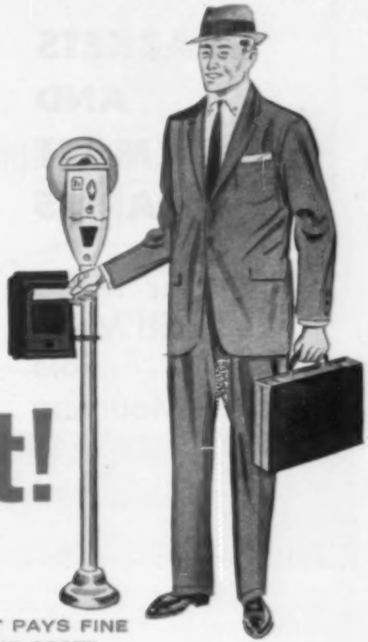
DUNCAN FINE-O-METER

After installation . . . cities report up to 80% of all parking fines collected are paid "on the spot" in DUNCAN FINE-O-METER boxes.

This effective, convenient system eliminates *embarrassing* trips to the police station thereby increasing voluntary payment without complaint. Also, *reduces* the number of tourist violators leaving city without paying fine.

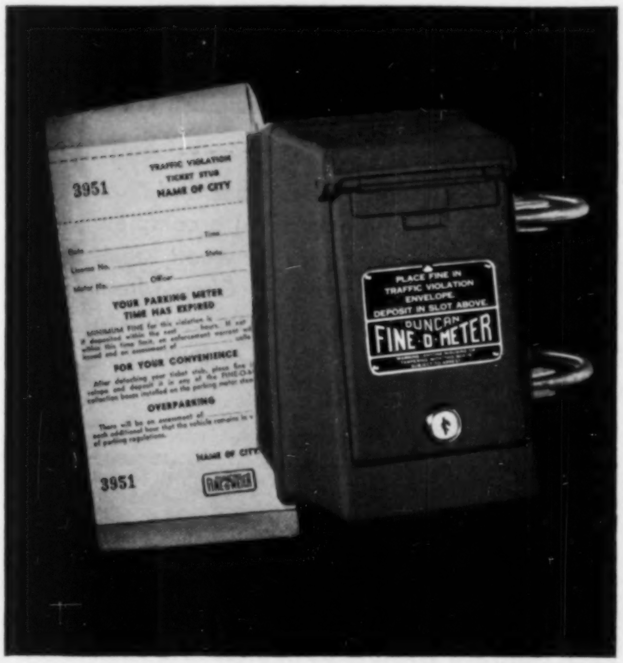
Weather-proofed violation ticket-envelopes used with the DUNCAN FINE-O-METER are readily available at low quantity prices. New "heavy-duty" ticket envelopes, especially prepared to withstand long periods of exposure to extreme moisture now available for prompt shipment.

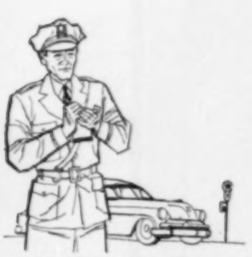
For good public relations . . . investigate DUNCAN'S convenient system of traffic fine collection.



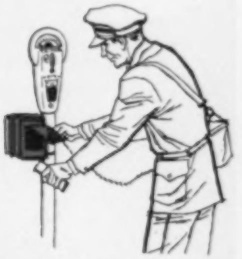
MOTORIST PAYS FINE "ON THE SPOT"

ea$y...convenient!


3951
TRAFFIC VIOLATION
TICKET STUB
NAME OF CITY
YOUR PARKING METER
TIME HAS EXPIRED
FOR YOUR CONVENIENCE
OVERPARKING
NAME OF CITY
3951
PLACE FINE IN
TRAFFIC VIOLATION
ENVELOPE.
DEPOSIT IN SLOT ABOVE.
DUNCAN
FINE-O-METER



OFFICER ISSUES TICKET-ENVELOPE



EASY TO COLLECT

DUNCAN PARKING METER

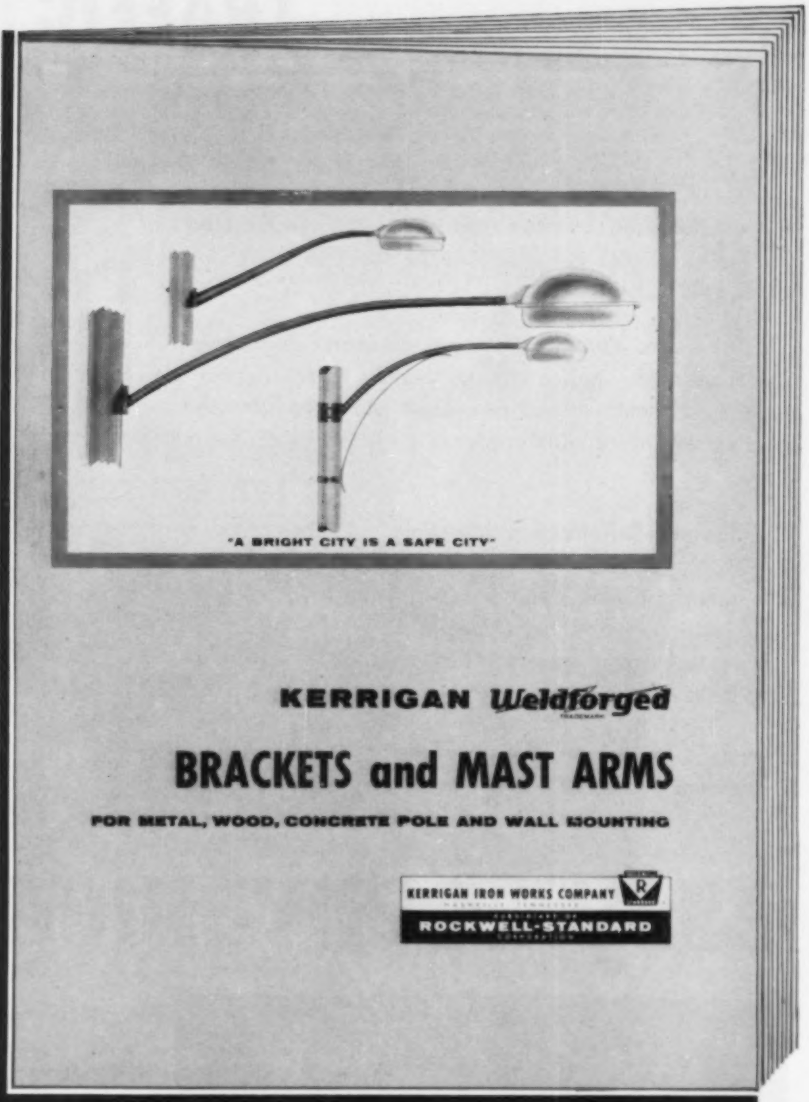
A Division of NAUTEC Corporation

CHICAGO 22, ILLINOIS

NEW
CATALOG

BRACKETS
AND
MAST
ARMS

For Wood
and Metal
Pole
Mounting



"A BRIGHT CITY IS A SAFE CITY"

KERRIGAN *Weldforged*
TRADEMARK

BRACKETS and MAST ARMS

FOR METAL, WOOD, CONCRETE POLE AND WALL MOUNTING

KERRIGAN IRON WORKS COMPANY
NASHVILLE, TENNESSEE
SUBSIDIARY OF
ROCKWELL-STANDARD
CORPORATION

New catalog pictured here describes and illustrates (with full engineering data) a complete line of brackets and mast arms for wood, steel, aluminum pole and wall mounting. Choose from a variety of high-strength, attractive, modern supports and brighten up your city or town. Get YOUR copy NOW!

ADDRESS:
DEP'T. A-7

KERRIGAN IRON WORKS COMPANY
NASHVILLE, TENNESSEE
SUBSIDIARY OF
ROCKWELL-STANDARD
CORPORATION

STREET AND AREA LIGHTING STANDARDS IN STEEL AND ALUMINUM

(Continued from page 144)

particular use to which they will be put.

We determine the required quality of an item or service after consultation between the purchasing agent and the head of the using department or division. A "brand name" is sometimes used in specifications and is only an expression of quality and does not exclude other brands.

The quantity delivered must be exactly the amount called for on the purchase order. If the quantity of a shipment is not correct, it will mean delay in completing the transaction and receiving payment for the order.

The city may alter its quantity requirements after issuing a purchase order. If so, the purchasing agent will issue a "change order."

The division of purchases and stores, in cooperation with the using departments and divisions, has developed many standard specifications for commodities which it purchases regularly. Vendors may obtain copies of these specifications.

To receive payment for goods and services furnished to the city, a vendor must make out two forms: (1) the firm's own invoice, and (2) a City of Phoenix claim form. Both must be mailed to the city auditor.

The invoice must show: (1) the city purchase order number, (2) complete descriptions of the goods or services furnished, (3) quantity, (4) unit prices and extensions, (5) all applicable taxes, and (6) the discount terms. The invoice should include the vendor's invoice number if his firm uses a numbering system.

The city claim form is included with the purchase order issued to the vendor. The vendor attaches the completed form to the original copy of his invoice and mails both to the city auditor.

The vendor is required to supply only the information requested on the vendor. The vendor attaches the front upper portion the vendor should show the purchase order number, complete descriptions, quantity, unit prices and extensions, and applicable taxes. A claim form must be notarized before it is valid and before the city can make payment.

The invoice and the claim form are reconciled with the purchase order and with a receiving report submitted by the using department or division. The city auditor's office then issues a warrant for the amount due the vendor. ◄◄

Modern Waste Disposal
DEMANDS
MODERN INCINERATORS

You tell us—
We'll tell you—

Tell us the population of your area. We'll tell you frankly why incineration is the best answer to your waste disposal problem . . . the type and size incinerator needed . . . Approximate construction and operating costs. No obligation.

MORSE BOULGER · SINCE 1890 · KERNER · KERNERATOR

INCINERATORS BY
MORSE BOULGER, INC.
Today's Engineering Backed By
More Than 70 Years' Experience

80 Fifth Ave.
Dept.20-8, New York 11, N. Y.
WA 9-8000 • Representatives Everywhere
MEMBER
Incinerator Institute of America
Air Pollution Control Association

FOR BOATING'S
toughest jobs

Here's the power you want for the really tough jobs of commercial boating—Evinrude's 1961 Big Twin. Develops 40 hp at 4500 rpm. New, **foolproof** fixed-jet carburetion. Thermostat controlled engine for most efficient performance under all conditions. Fast-stepping, fuel-saving Cruis-Throttle. Amazingly easy manual starting. Choice of props to fit boat and work. Quieter-than-ever operation. Hard-working, smooth-running, load-lugging, long-lasting, sea-going power—at a price that makes it boating's standout value. If you're a boatman whose living depends on dependable power, the 1961 Big Twin is for you. See your Evinrude dealer—listed in the Yellow Pages under "Outboard Motors."

Evinrude Motors, 4143 N. 27th Street, Milwaukee 16, Wis.
A Division of Outboard Marine Corporation
In Canada: Mfd. by Evinrude Motors, Peterborough

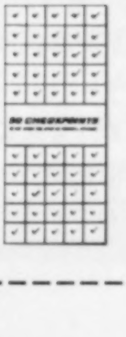
EVINRUDE
FIRST IN OUTBOARDS

Now! Sharp, permanent copies of reports, estimates, contracts . . .

at the touch of a button! The new Smith-Corona Marchant Vivicopy 12 is the world's most advanced photocopy unit. Just plug it in, push the button—Vivicopy does the rest. Vivid, black-and-white, permanent copies of all your department records on flat, white bond-quality paper right in your own department—when you need it. Just think of the efficiency. No time or money lost in retyping or proofreading. See the SCM Vivicopy 12 in action.

Mail coupon today!

FREE
OFFER!
"50 Checkpoints To Help Improve Your Office And Personnel Efficiency"
Handy booklet tells you how to control overhead costs!



Photocopy Products, Smith-Corona Marchant
410 Park Avenue, New York 22, N. Y. A7

☐ At no obligation, please send me my free copy of "50 Checkpoints To Help Improve Your Office and Personnel Efficiency."

☐ Demonstration at no obligation.

Name..........Title..........

Company..........

Address..........

City..........Zone......State..........

Now available...
An IMPORTANT NEW FILM
about ABS PLASTIC PIPE
for GAS, WATER and DRAINAGE

■ This new motion picture, through actual on-location scenes of gas, water and drainage installations, clearly points out the many extraordinary advantages of ABS semi-rigid plastic pipe. See this new film and find out how ABS plastic pipe made of CYCOLAC* brand polymers can be important to you in cutting material costs, cutting installation costs, cutting handling and maintenance costs while still providing superior performance characteristics. For a free showing at your convenience, Write Department A-7

MARBON CHEMICAL DIVISION **BORG-WARNER**
WASHINGTON WEST VIRGINIA

*Cycolac is the registered trade-mark of Borg-Warner

#1-10664

Progress the Theme of APWA Meeting

More than a hundred public-works officials took time out from their busy schedule to compare notes at a recent joint session of the Alabama and Georgia Chapters, American Public Works Association.

L. B. Green, superintendent of the Montgomery, Ala., Department of Sanitation and President of the Alabama Chapter, opened the session and Montgomery's Commissioner of Public Works Frank W. Parks welcomed the group. The opening session also included addresses by Earl D. James, mayor of Montgomery, Ed Reid, executive director, Alabama League of Municipalities, and E. F. Ledford, president of the Georgia Chapter.

Technical sessions during the first day included an equipment-maintenance panel and a panel on garbage collection and disposal with special emphasis placed on sanitary-landfill problems of cities.

During the second day of the two-day session the men turned their attention to street use and maintenance problems, including discussions on signs and parking. A water and sewage panel discussion gave special attention to lagoon sewage treatment.

Many firms in the area exhibited equipment such as sewer-cleaning machines, refuse-collection trucks, small trenching machines, front-end loaders, safety equipment and signs. To emphasize the progress made to date in public-works equipment, the two chapters sponsored an exhibit showing both old and new machinery and materials.

New officers installed at the meeting banquet included E. W. Coberly of Birmingham as president of the Alabama Chapter and Stafford Graydon of Atlanta as president of the Georgia Chapter. ◄◄

Upgrade Top Water-Works Personnel

Sam Baxter, Philadelphia's water commissioner and chief engineer, finds that privately owned water utilities are more apt to concern themselves with the problem of obtaining and keeping competent engineering and management personnel than are publicly owned utilities. If the management suffers from too much political control, establishing a long-range policy is difficult.

It is possible to improve some facets of the problem which will improve the recruiting and retaining of management and engineering personnel:

- **Raise the status of the entire field.**
- **Raise salaries to conform with value received.**
- **Aid good men to move from one utility to another.**
- **Rotate assignments to enlarge the experience of the young men.**
- **Increase recruitment efforts to obtain college graduates.**
- **Treat professionals professionally with additional benefits in line with responsibilities.**

Both public and private utilities should do more to upgrade the entire profession. These efforts will assist all utilities in their efforts to attract and to retain choice top personnel. ◄◄

RYNAL'S Prefabricated RADAX COIL
NUT
SCREWS ONTO YOUR PRESENT BROOM CORE IN MINUTES!
LIKE SCREWING A NUT ON A BOLT
BOLT
YOUR PRESENT BROOM CORE
YOUR PRESENT BROOM CORE
Reduces Broom Cost & Sweeper Down Time!

NO CORES TO BUY—USE YOUR OWN!

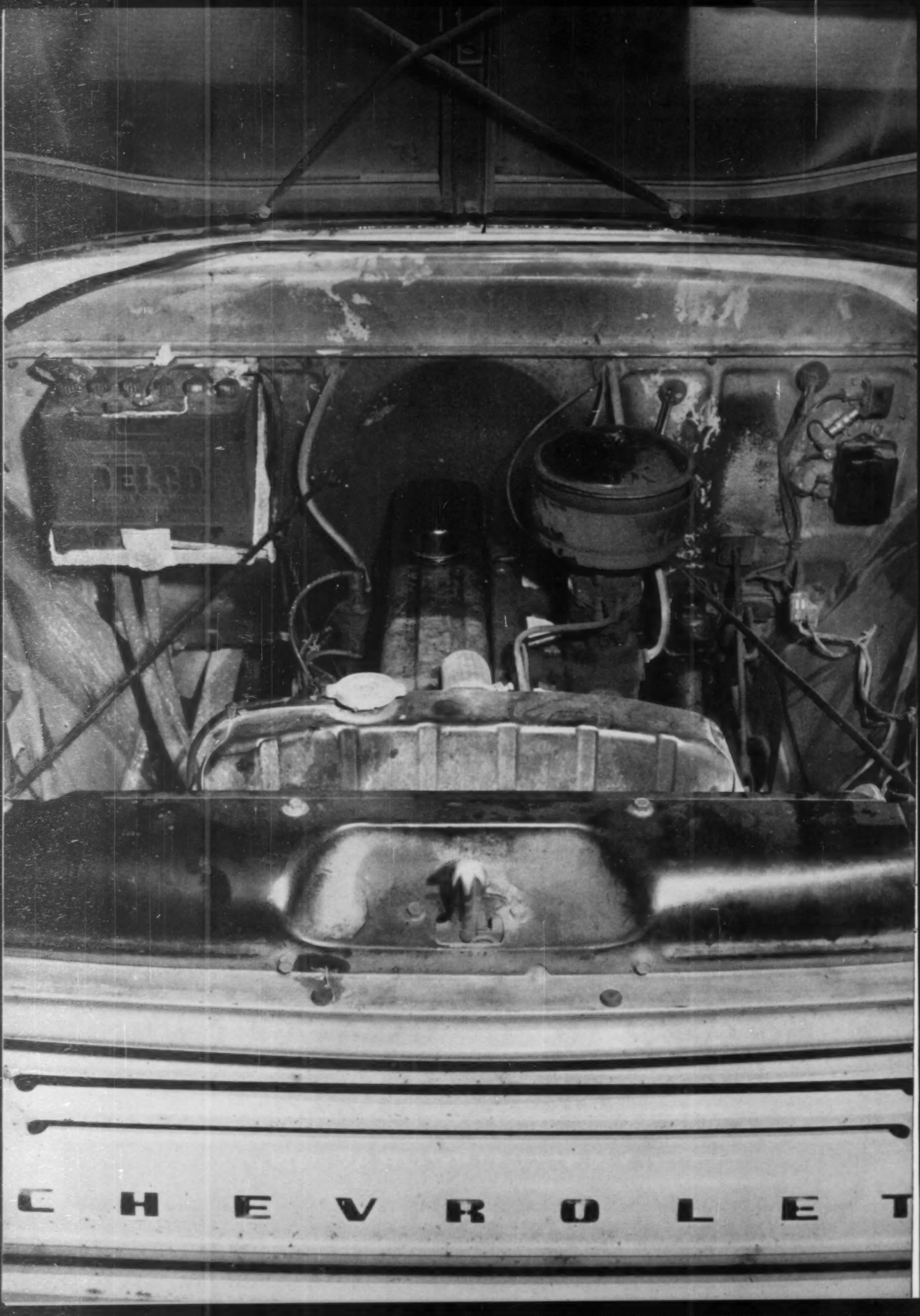
FILLED WITH LONGEST WEARING PLASTIC BRISTLES

COILED TO FIT EVERY MAKE OF POWER SWEEPER OR PULL-TYPE ROAD BROOM

WRITE FOR DETAILS

RYNAL CORPORATION

114 Saint Joseph Street, Dept. 1A, Arcadia, California • Telephone Code Area 213 HIllcrest 6-3600



DELCO
CHEVROLET

230,000 MILES WITHOUT AN OVERHAUL!

OLD PRO

That truck engine on the opposite page is one of Chevrolet's famous Thriftmaster 6's—and if it looks a bit battle-scarred, there's a good reason! This one has just turned 230,000 miles, working for Earl McDaniel of Dallas Texas, on a hustling round-the-clock air mail delivery job. *And here's the stopper: this engine has never been overhauled. It has required only routine maintenance over all those miles.* That, you'll agree, is professional *truck* power at its dollar-saving best. That's the way it is with the most widely used engine in the business—Chevy's Thriftmaster 6!

Rarely does any truck engine—even a Chevy Thriftmaster 6—run up a performance record like this one. We point it out here merely as proof that the Thriftmaster 6 brings *staying power to spare* to any job it tackles. It's evidence that Chevrolet puts real *truck* "horses" under the hood—in a light-duty power plant that's built to outlast and outsave any other you can name.

Hustling air mail from airports to town on a stop-watch schedule is a 24 hours a day, 7 days a week responsibility Earl McDaniel, U.S. Mail Contractor, shares with his '59 Chevy ½-ton panel. And, according to Mr. McDaniel, after 230,000 miles, the truck "still purrs like a kitten . . . hasn't had or needed an engine overhaul. The pan has never been off, the valves have never needed grinding."

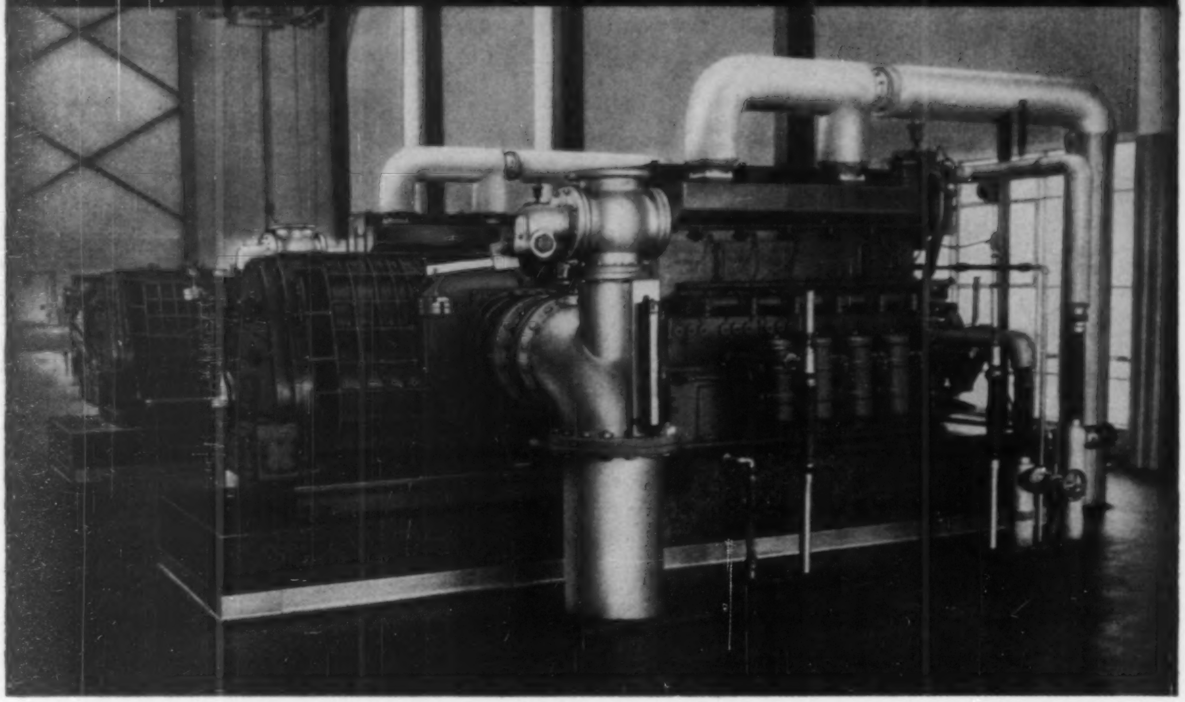
The Thriftmaster 6 provides the basic power for Chevy's conventional light-duty truck line. *Standard* in pickups, panels, light-duty stakes, delivery vans and the Suburban Carryall, it's the end product of many years of engineering refinement.

It provides economy-contoured camshaft and improved carburetion to give you extra power, extra miles from every gallon of gas. Also, there's a forged steel crankshaft, high quality steel and steel alloy valves, durable precision bearings, full pressure lubrication system, oil-bath air cleaner—all contributing to longer engine life and greater overall economy. This is the most experienced truck engine in the business, and it's ready to wade into your roughest work and keep you way ahead on fuel and maintenance expense. It'll pay you to check into it at your Chevrolet dealer's! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

THRIFTMASTER 6 PERFORMANCE DATA

Gross Horsepower	135 @ 4000 rpm
Net Horsepower	115 @ 3600 rpm
Gross Torque, lb-ft	217 @ 2000 rpm
Net Torque, lb-ft	195 @ 2000 rpm
Piston Displacement	235.5 cubic inches
Bore and Stroke	3$\frac{9}{16}$" x 3$\frac{15}{16}$"
Compression Ratio	8.25 to 1

1961 CHEVROLET STURDI-BILT TRUCKS CHEVROLET



WHITE/SUPERIOR ENGINES OPERATE ON FREE SEWAGE GAS

at Hamilton, Ohio's 12,000,000 gallon per day sewage treatment plant

Two White Superior 6G-825 gas engines at Hamilton, Ohio's new activated sludge type sewage treatment plant are saving taxpayers thousands of dollars yearly. Engines operate on free sewage gas produced in the plant digesters. The Superiors, each rated 300 bhp at 690 rpm, drive blowers with a total capacity of 14,000 cfm to aerate sewage. Heat from engine cooling water also helps heat the buildings.

Superiors also feature outstanding design simplicity, with fewer moving parts than comparable power units. Maintenance and repair costs are minimized, and replacement parts are seldom needed, even after extremely long periods of operation.

White Superior covers every municipal power requirement with a complete line of dependable diesel, dual-fuel and gas engines, 190 to 2150 hp, or 150 to 1500 kw. *Write for literature today!* WHITE DIESEL ENGINE DIVISION, Springfield, Ohio.

White DIESEL | Superior ENGINES

White Diesel

Two gate trucks equipped with valve operators started closing off the valves about an hour before actual replacement work began.

→

Prior to replacing the valves, pipe saws were set up on the mains and small valves closed to guarantee minimum inconvenience to consumers.

Major Distribution Valves Replaced

. . . in the heart of Bridgeport, Conn., but only after planning, field investigation, a dry run and security precautions

By **K. E. BENDER***

Many of the older cities in the United States face major maintenance and replacement programs. In the center of large, busy industrial cities a major undertaking such as the replacement of valves on principal trunk lines presents a serious problem. To accomplish this type of work, with a minimum of inconvenience and a maximum of protection in the high-value business districts, is one of the most important jobs of the water-works operators. Through careful planning and advance preparation, the Bridgeport Hydraulic Company met this problem effectively, efficiently, and economically.

Most of the distribution system in the downtown Bridgeport area is at least 50 years old and it was in this section that we undertook a major valve-replacement program in the spring of 1958. Through a periodic valve-inspection-and-testing program, we discovered that several of the mainline valves in the principal business area were defective for one reason or another and could not be relied upon to hold water in the event of a major break. This called for a complete engineering study of the area to ascertain which valves were defective and to devise a program that would provide for their replacement efficiently and economically.

During January 1958, the Bridgeport Hydraulic Company retained the Pitometer Associates of New York to conduct various tests and investigations throughout the system. One particular phase of the investigations was to work through the downtown section and prove, by actually making complete shut-outs between mainline valves, those valves which were defective and would not hold water. We did this work during the winter months when demand was at an absolute minimum and it was further carried on between the hours of midnight and 5:00 a.m. in order that a minimum

(Continued on page 155)

---

* Mr. Bender is Superintendent of Distribution for the Bridgeport Hydraulic Company, a private water company serving seven cities and towns in lower, western Connecticut.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Money-Savin' Saws for Municipalities

To the professional woodcutter, Homelite Chain Saws are noted for their Money-Makin' features. To municipalities, these same features are Money-Savin' advantages. It's easy to see why. Homelite Saws are rugged — cost less to maintain. They stand up to grueling day-in, day-out operation and ask for more. They're fast-cutting saws — reduce time and cost of clearing land and repairing storm damage. And they're lightweight and easy to handle to minimize operator fatigue.

The powerful new Homelite 707D direct-drive saw shown above will fell trees up to 5 feet in diameter. Yet it weighs only 19 lbs. less bar and chain. Seven other gear-drive and direct-drive models to choose from . . . matched in power and performance to any woodcutting job. Plus Money-Savin' clearing bars, brush cutters and plunge bows. Write for complete information.

Homelite chain saw dealers and Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call or write for convincing demonstration or fast service in any way.

HOMELITE
CARRYABLE
SAWS PUMPS • GENERATORS
BLOWERS

HOMELITE A DIVISION OF TEXTRON INC. – 107 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA • TERRY MACHINERY CO., LTD.

(Continued from page 153)

of inconvenience would occur to our customers. This investigation showed that four 24-inch valves, three eight-inch valves, and one six-inch valve required replacement.

The installation of new valves in the lines under pressure, and the abandonment of the existing valves seemed to be the obvious solution. The work could be carried on with no interruption in service whatsoever. On this basis, we made a complete study of the various underground facilities within the street near the points where the existing valves were located. Locations of the various facilities, gas, sewer, electric, telephone, etc., were obtained and actual test pits dug to determine if space would be available for inserting valves under pressure. In order to insert 24-inch valves under pressure, they must be installed horizontally, requiring approximately 13 feet clear distance from the back of the main to the point where the cutting equipment is used. Thorough investigation revealed that there would be no possibility whatsoever of installing valves under pressure, making it necessary to shut down the area and remove defective valves and replace them with new ones.

After the objective had been thoroughly identified, we had to test the valves that would be required to shut off the section in order to effect the repairs. This work, carried on during the night, included a complete trial shut-out made exactly in the manner as would be done during the replacement program. Once this phase of the work was completed and we knew definitely that it would be possible to effect a complete shut-out, we started making plans to determine the number of customers that would be involved and how many would require temporary service lines during the operation.

The distribution engineer's office prepared detailed maps showing the entire affected area. The maps indicated the mains in the street and the exact valves that would be closed, and after being printed, were forwarded to the service department and the inspection department. These two departments collaborated to compile a listing of every affected customer. The final listing indicated that 457 customers would be involved requiring that 64 valves be closed which would put 38 hydrants and 14,700 feet of main out of service, affecting 38 blocks. Since this work was taking place in the principal business district, several hotels, restaurants, theatres, stores, multiple dwelling units, and various other commercial establishments were involved.

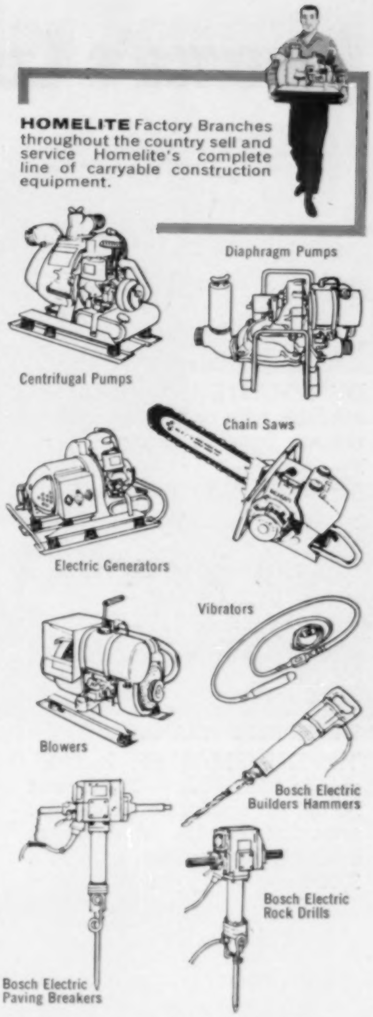
In view of the large number of customers affected and the tremendous number of valves that would have to be closed, we decided to break the job into two sections. When the plans had progressed to this point, we made contact with the Fire Department of the City of Bridgeport, the National Board of Fire Underwriters, and the New England Fire Rating Association. All of the agencies involved were given maps showing the valves that would be shut, a list of the customers that would be out of water, and a list of the hydrants that would be off duty. After consultation with the various authorities, we decided that the first phase would take place on a weekend. Each customer would be notified at least one week prior to the actual shut-out, and where necessary, a temporary supply would be provided. The inspection department and the service department conducted the notification work and temporary service-line work.

The first phase consisted of removing and replacing two 24-inch valves, three eight-inch valves and one six-inch valve. Field crews started excavating on the Tuesday preceding the weekend that the work was to be done. Special police protection, of course, was required for traffic control. After completing the excavations the crews set up Wachs pipe saws on the mains, and planked over the openings to keep traffic interference to a minimum. On Friday we installed two-inch taps on both sides of the defective 24-inch valves as a precautionary measure in event that a perfectly tight shut-off could not be made. This would also facilitate the draining of the line. On the same day many of the small valves were closed in order to save time on Saturday night with careful consideration given to the selection of these particular valves so as not to curtail fire protection and domestic supply.

Emergency Precautions

That Saturday night, at 11:00 p.m., two gate trucks equipped with Payne-Dean valve operators reported to the distribution engineer and commenced closing the balance of the smaller valves. At approximately midnight, the remainder of the work crews and equipment operators reported to the scene of activity where they began to set up the necessary equipment. Between 11:00 p.m. and 12:00 midnight, the Bridgeport Fire Department personnel reported to

(Continued on page 158)



HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.

Diaphragm Pumps
Centrifugal Pumps
Chain Saws
Electric Generators
Vibrators
Blowers
Bosch Electric Builders Hammers
Bosch Electric Rock Drills
Bosch Electric Paving Breakers

HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

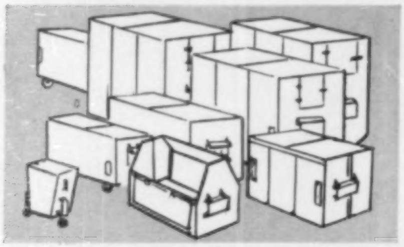
MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

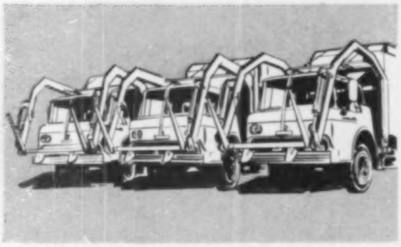
HOMELITE
A DIVISION OF TEXTRON INC.
107 Riverdale Ave., Port Chester, New York

In Canada:
TERRY MACHINERY CO. LTD.

America's Leading Line of Mechanized



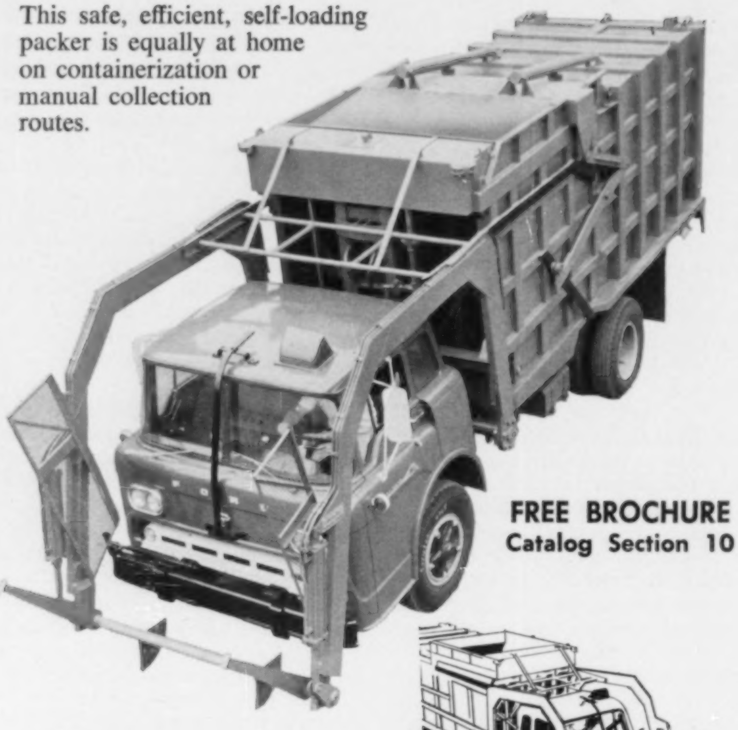
DUMPMASTER Containers are available with or without casters, ranging from ½ through 8 cu. yd. capacity.



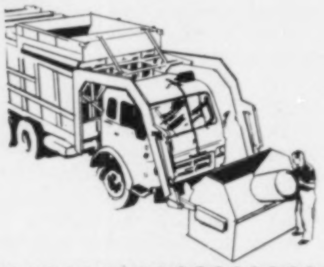
THREE SIZES AVAILABLE

The DUMPMASTER is available in three sizes — 20, 24 and 30 cu. yd. bodies. Safe clearance arms that clear the cab doors are available in capacities of 1,500, 3,000 and 6,000 pounds.

This safe, efficient, self-loading packer is equally at home on containerization or manual collection routes.



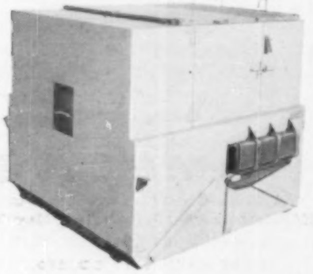
FREE BROCHURE
Catalog Section 10

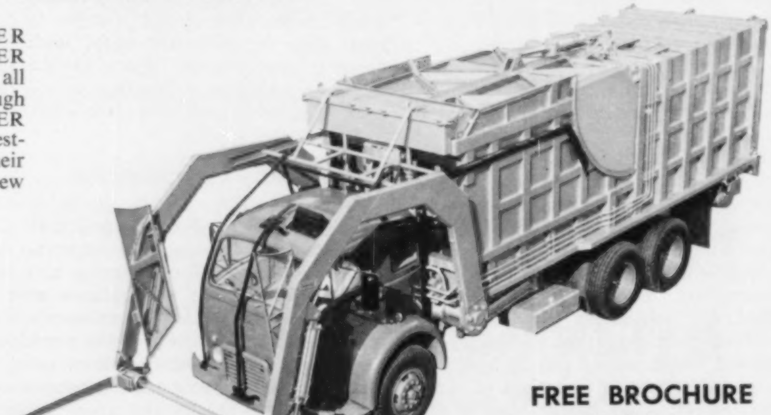


DEMPSTER DUMPMASTER®

The SUPER DEMPSTER-DUMPMASTER

The SUPER-DUMPMASTER handles converted DUMPSTER Containers up to 12 cu. yds., and all DUMPMASTER Containers through 12 cu. yds. Owners of DUMPSTER equipment may secure low-investment conversion kits to adapt their old containers for use with this new system.



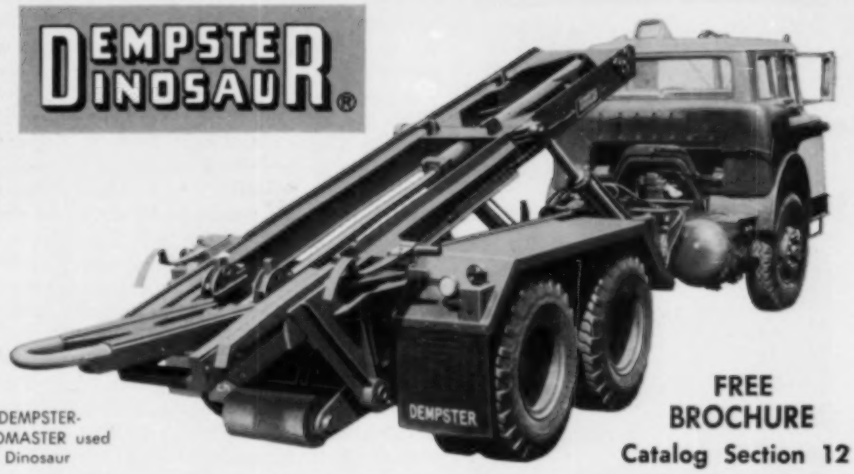


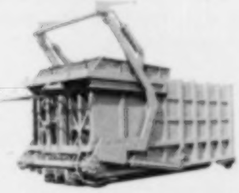
FREE BROCHURE
6073-A

Refuse Storage and Collection Equipment

DEMPSTER DINOSAUR®

With its tilting skid frame and hydraulic lifting action, the DINOSAUR handles loads limited only by the capacity of the truck. Containers handled range from 8 cu. yds. to 40 cu. yds. and over. It is ideal for transfer-station use and for handling ash in incinerator operations.




The DEMPSTER-DINOMASTER used with Dinosaur

FREE BROCHURE
Catalog Section 12

DINOSAUR picks up DINOMASTER body preparatory to leaving on refuse pick-up route.

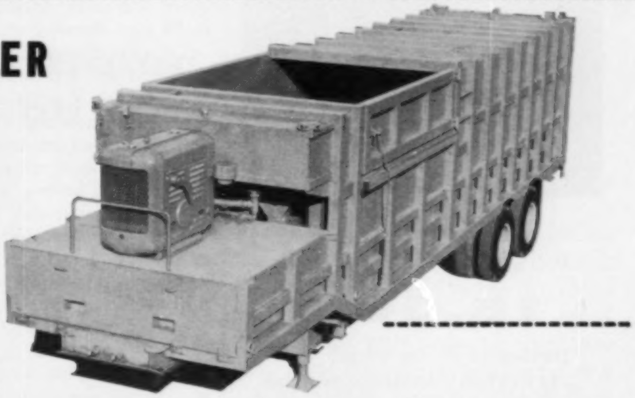
DINOMASTER engages loaded container and begins emptying cycle.

Dinosaur picks up 40 yd. refuse container

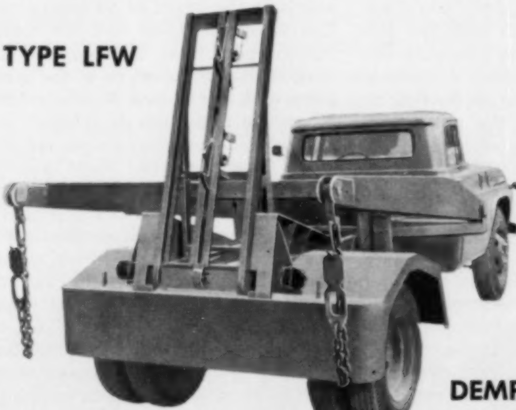
Thirty yard refuse container being loaded by GRD 304-F2

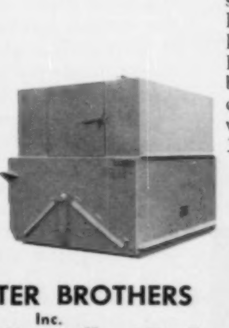
DEMPSTER Compaction TRAILER

This DEMPSTER development is providing highly efficient transfer-station performance in major cities from coast to coast. It can be used with a GRD for ground loading, or ramp-loaded by conventional packers and DEMPSTER-DUMPSTER LFW models. Sizes available are 42 and 53 cu. yd. capacity bodies, which carry the equivalent of up to 200 cu. yds. of uncompacted material on each trip to the disposal area.



TYPE LFW





Still highly popular and efficient for short-haul container service is the DEMPSTER - DUMPSTER Type LFW. One man, the driver, and one DUMPSTER can handle a large number of big-capacity containers each day. Seven basic models are available, with payloads ranging from 6,000 to 38,000 lbs.

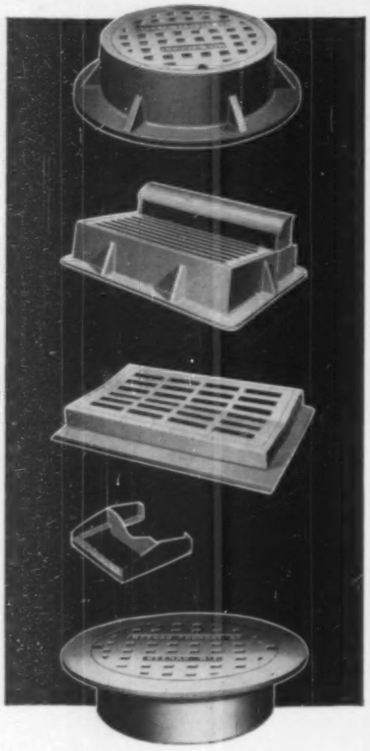
ALL A PART OF THE DEMPSTER DUMPSTER® SYSTEMS

DEMPSTER BROTHERS
Inc.
Dept. AC-7 Knoxville 17, Tenn.

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as –



What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN

Chicago office: 5445 N. Neva Ave., Chicago 31

(Continued from page 155)

the scene and liaison was made between the Fire Department, Police Department, and Bridgeport Hydraulic Company. A temporary headquarters was established at one of the main intersections and, through radio, direct communication was possible between any one of the three groups. By means of radio, the Fire Department kept track of the valves as they were closed, and they in turn proceeded to identify each hydrant that would be off duty by attaching a red lantern to it. This was obviously required in the case where a hydrant was on a corner, or where there were two parallel mains in the same street with only one main in service.

A walking fire patrol comprised of 50 firemen and policemen patrolled the entire downtown area and kept it under strict surveillance while the section was without water. Plainclothes detectives and plainclothes members of the National Board of Fire Underwriters augmented the fire patrol. The Fire Department made extensive plans to cope with any fire in the section shut off and moved in equipment from outlying firehouses to assist if necessary.

Time was important for the maximum allowable time allotted for the work in this section was ten hours, from 1:00 a.m. Sunday morning to 11:00 a.m. Sunday morning.

To expedite draining the mains involved we set two-inch pumps at the location of each of the two-inch taps, and attached three four-inch pumps to fire hydrants. The remaining valves were closed at 1:00 a.m. and as soon as we were positive of a complete shut-out, the hydrants at the higher elevations were opened to permit air to enter the line and the various pumps were started to pull the water from the mains. When the head was relieved and the draining process was under way, we started the pipe saws and the job proceeded according to plan. As the pipe was being cut at the various locations, other crews delivered to the various locations the new gates to be installed along with the necessary nipple pieces that had already been poured into the gates. The saws made cuts at predetermined points making actual valve replacement a matter of lifting the defective gate with a nipple on each side of it and dropping in a new unit with two solid sleeves. From this point on the entire job was routine.

A total of 25 men comprised the field crews involved in the removal and installation of the six valves on the first phase. They completed all work, restored service and cleared the lines of air and flushed them by 10:30 a.m. on Sunday morning.

The second phase was somewhat smaller and easier in that only two 24-inch valves had to be replaced and was handled in exactly the same manner on the following weekend.

We delivered the removed 24-inch valves to our construction yard for cleaning and examination by a representative of our valve supplier. This examination indicated that two of the four valves could be rebuilt at a relatively minor cost and, accordingly, these two valves were returned to our supplier for overhaul and reconditioning.

Inspection Program

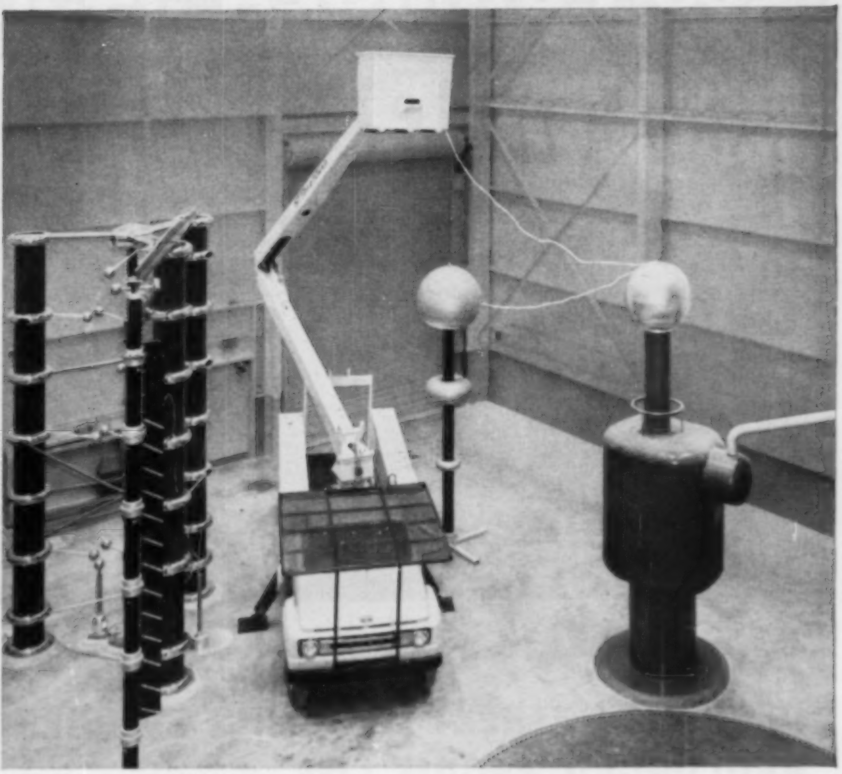
Perhaps the most important point that should be stressed in connection with this program is the necessity of a periodic valve inspection and testing program in the modern-day water-works operation. However, to merely operate a valve part-way or even close it fully is not the ultimate answer. Such inspection and operation is commendable, however, it does not prove "beyond the shadow of a doubt" that the valve will close tightly and will hold water in the event of an emergency. In all major trunk mains periodic shut-outs should be made between each main-line valve. This serves several purposes: it proves that the valves are operating effectively and that there is little or no leakage existing; it checks the condition of the side valves; it proves that the check valves on large private installations or elevated tanks are functioning properly; and it determines if any unknown cross-connections may exist. In addition to the benefits described from such a program, it also provides a dress rehearsal for the personnel responsible for closing large gates and shutting out major mains in the event of an emergency. The valve operators and the distribution personnel become familiar with each major portion of the trunk lines and know how to close them off with a minimum of delay.

During our valve-replacement program, many citizens slept soundly and peacefully throughout the entire project. So far as the Bridgeport Hydraulic Company knows, no one in any hotel was without water, and no one who required water for the operation of equipment was forced to take any emergency measures. We feel that it was only through careful planning and engineering that a job of this size was conducted with such a small amount of interference to any of our customers. ◄◄

OTTAWA
STRATO-TOWER

TESTED

at 200,000 Volts (AC) Line to Ground



Safety of Fiberglas Boom Demonstrated by Detailed High Voltage Tests

A series of 10 documented high voltage tests have been run to demonstrate that the Strato-Tower Fiberglas boom provides protection for the basket crew if the boom should come in contact with transmission lines up to 340 KV. Conducted in one of the nation's newest high voltage laboratories, a series of 26 runs were made to test the boom and its parts for four minutes at 200,000 volts (AC) line to ground. The tests were made with a *complete unit installed on the truck and ready to work.* A picture of one of the test set-ups is shown above.

The tests were made on the Fiberglas boom itself, the controls, the basket leveling system, hydraulic power lines for operation of power tools, and finally a test with 200,000 volts directly inside the basket. Your Strato-Tower distributor will be glad to give you a complete report on the tests and their results.

The Strato-Tower Fiberglas boom is built for long life, too. The completely die-molded boom is glass-smooth. It has overlapping sides for extra strength. The basket is contoured on sides, front and rear to deflect limbs and lines to eliminate danger of tangling. This boom is available on any of the 27 models of Strato-Tower along with a wide range of other optional equipment to match the Strato-Tower to your job.

Get the Full Strato-Tower Story–
Mail the coupon for 16-page catalog

Dept. AC7
EQUIPMENT DIVISION, YOUNG SPRING & WIRE CORPORATION,
BOWLING GREEN, OHIO

☐ Please send me the 16-page catalog
☐ Have your representative call

Name________________________________

Address________________________________

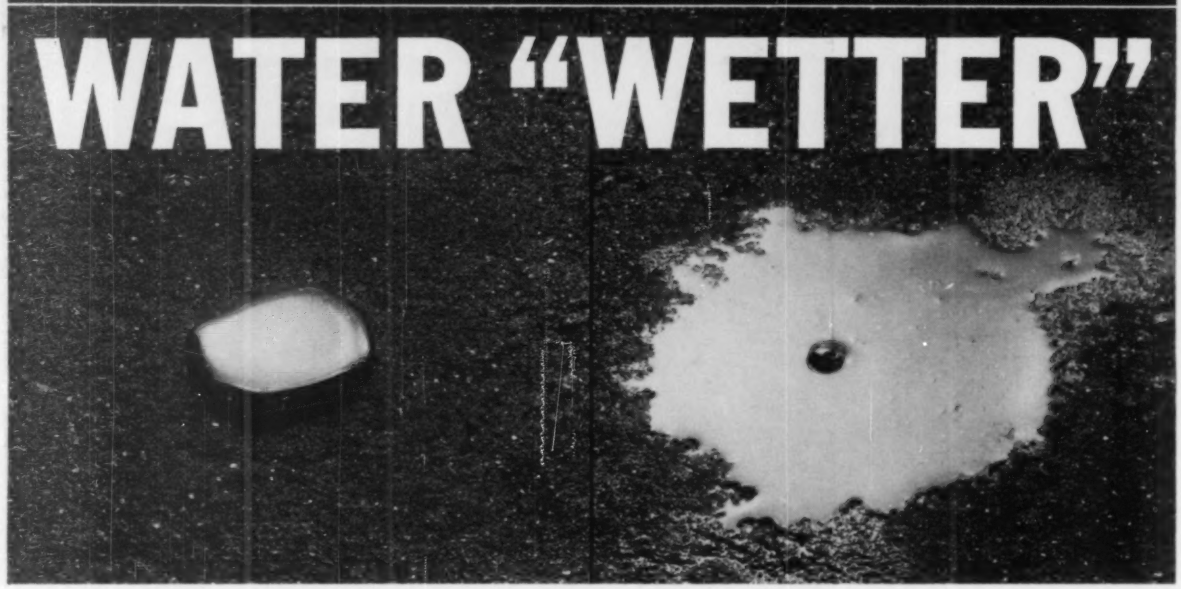
City________________ Zone____ State____________

EQUIPMENT DIVISION

YOUNG
SPRING & WIRE CORPORATION

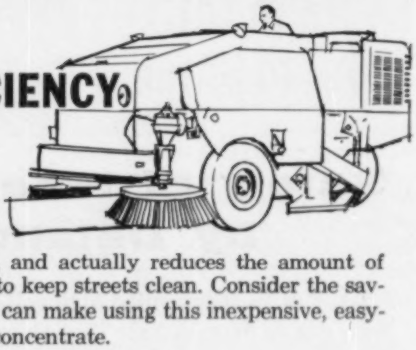
BOWLING GREEN, OHIO *Manufacturer of*
DAYBROOK TRUCK EQUIPMENT **OTTAWA** CONSTRUCTION EQUIPMENT

Zep FORMULA 9458 makes WATER "WETTER"



for

IMPROVED STREET CLEANING EFFICIENCY
PROLONGED BROOM LIFE
WATER SAVING



For a more effective job of street cleaning, add Zep Formula 9458 to water used in sweeping machines. A specially formulated system of wetting agents in this liquid concentrate greatly lowers the surface tension of water, allowing it to penetrate dust and dirt better . . . actually making water "wetter." As a result, Zep Formula 9458 is an excellent dust-laying aid, making collection by sweeping machines easier and more efficient.

Cut cost of washing down city streets by adding Zep Formula 9458. Its detergent action loosens street dust and dirt, and actually reduces the amount of water needed to keep streets clean. Consider the savings your city can make using this inexpensive, easy-to-use liquid concentrate.

USE ZEP FORMULA 9458
AS PRE-SOAK FOR SWEEPER BROOMS
and prolong the service of these expensive brushes. Treatment with Zep Formula 9458 makes brush bristles more pliable, longer lasting. You save up to 50% (often more) in replacement costs.

See for yourself . . .

Conduct your own test of how Zep Formula 9458 actually "makes water wetter." A free sample will be sent to you upon request.

Full information about Zep Formula 9458 or about any of Zep's many maintenance and sanitation products for municipal use is available from our office nearest you. Call or wire collect.

Zep

MANUFACTURING CORPORATION

FIRST in Maintenance and Sanitation

ATLANTA
1310 SEABOARD INDUSTRIAL BLVD. N.E.

BIRMINGHAM
3605 THIRD AVENUE SOUTH

CLEVELAND
13112 BROADWAY

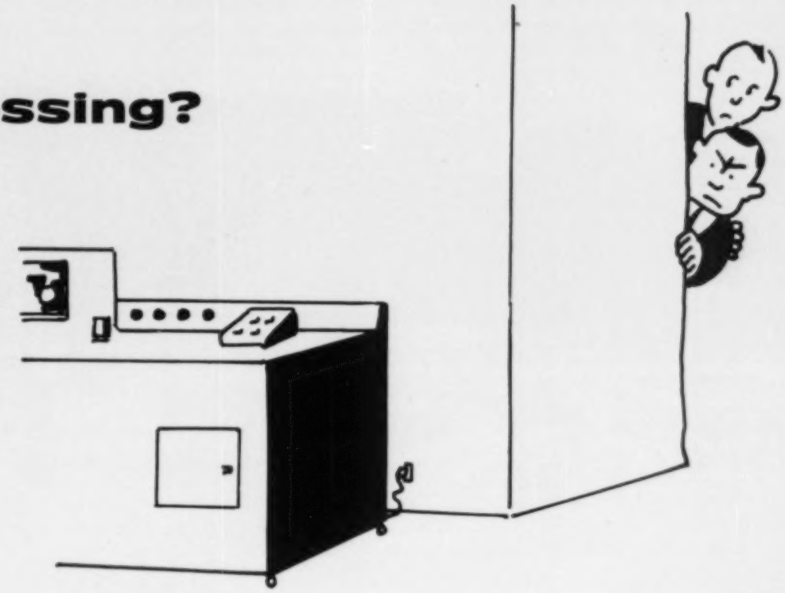
DALLAS
1103 SLOCUM STREET

KANSAS CITY
111 EAST 10TH AVENUE

NEWARK
231 JOHNSON AVENUE

Should City Management Consider Electronic Data Processing?

The way to find out is to analyze all your city's physical and paper operations



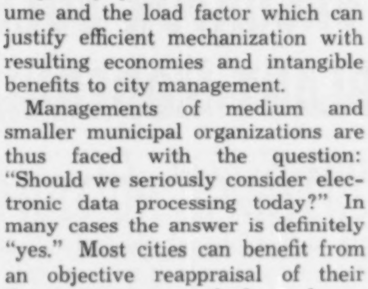
By **A. W. HATCH**
Management Consulting Division
Ebasco Services, Inc.
New York, N. Y.

According to the Municipal Yearbook, 1960 will go down as the year when "automation hit City Hall." Because of recent significant developments in automation, more and more municipal authorities are showing increasing interest in the mechanization of municipal record keeping and data processing. This trend is likely to continue.

The prospects for automation of municipal administrative functions have changed from a costly pioneering venture available only to larger organizations, to a practical reality open to a medium or smaller sized city as well. Data-processing equipment has been improved in reliability and performance. Even more important, it is now available in a range of price and capability to meet the needs of all but the very small city. Programming and installation costs have been reduced. Along with these developments has come a trend toward centralization and integration of data-processing functions previously performed independently by the several municipal departments. Integration of operations frequently provides the work volume and the load factor which can justify efficient mechanization with resulting economies and intangible benefits to city management.

Managements of medium and smaller municipal organizations are thus faced with the question: "Should we seriously consider electronic data processing today?" In many cases the answer is definitely "yes." Most cities can benefit from an objective reappraisal of their data-processing methods and requirements.

An intensive study of the potentials of electronic data processing is a major undertaking. The task is complicated by the variety of equipment available and by the unfamiliar, and often confusing, technical terms used. However, even a limited review of data-processing functions and operations within the organization will establish some guide lines to indicate mechanization possibilities.



Such a review should encompass the data-processing requirements, and systems designed to meet them, in each of the municipal departments. This type of review should be done periodically regardless of the present system. A fresh, objective view should be taken of the overall data-processing operation. In the course of the review, costs of present operations should be established and tabulated.

Prospective applications include:

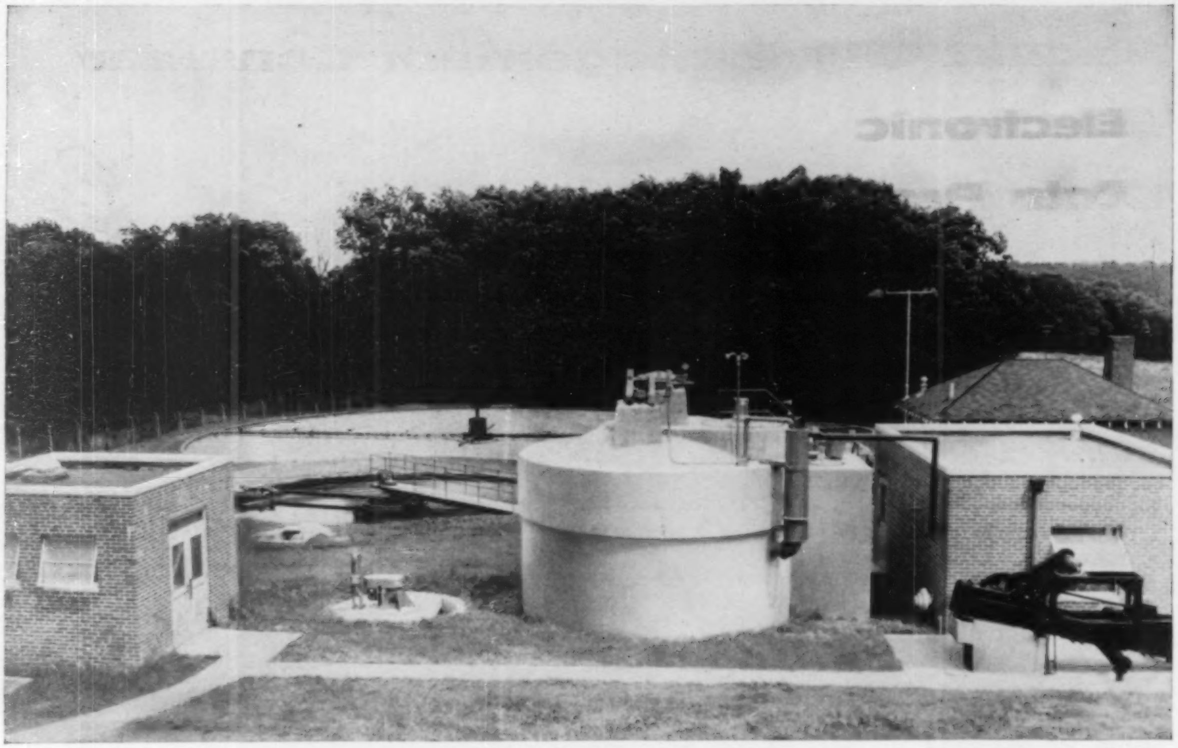
Utility billing and accounting
Appropriations and cost accounting
Tax billing and accounting, including delinquent accounts
Licensing records
Payrolls and personnel records
Stores accounting
Voters' registration
Social services warrants, records and reports
Police "mug" and "modus operandi" files, post hazard analyses
Traffic statistics
School registration, student scheduling, records
Land use and planning data
Preparation of special reports and engineering applications

The first step is to determine the feasibility of centralizing and integrating many of the functions that may now be separated. The feasi-

(Continued on page 163)

---

[*] The author is Manager, Accounting and Management Control Services, Ebasco Services, Inc., 2 Rector Street, New York.



DORRCO VACUATOR SOLVES SEWAGE PLANT MODERNIZATION

at Dixon State School, Ill.

Recent improvements to this 20 year old institutional sewage treatment plant incorporate the principle of vacuum flotation for removal of grease laden waste. This addition augments the action of the old trickling filter, solves the problem of overloading and relieves a previously obnoxious condition in the primary clarifier and the filter bed.

The Dorrco Vacuator aids treatment by making a three-part separation — grease and scum are floated to the surface of the totally enclosed Vacuator tank and discharged to the digester, grit is settled to tank sump for pumping to a Dorrco Grit Washer before final disposal, and the clarified effluent is sent to the trickling filter for secondary treatment.

For information on this and other Dorr-Oliver equipment for modern sewage treatment, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

Consulting Engineers: Crawford, Murphy & Tilly, Springfield, Ill.
Mechanical Contractors: Mechanical Constructors, Moline, Ill.
General Contractors: Linquist Construction Company, Dixon, Ill.

DORR-OLIVER
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

DORRCO and VACUATOR – T.M. Reg. U.S. Pat. Off.

(Continued from page 161)

bility of such moves in municipal organizations may sometimes be obscured by expense sharing among systems by some official. Such obous operations, and mistrust of new systems by some official. Such obstacles can often be overcome by carefully explaining the proposed changes and by devising an equitable scheme for reimbursing a central service group for data-processing work.

Centralized electronic data processing is generally attractive because it can provide:

Better utilization of equipment through pooling of several applications

Better equipment to handle more applications than would be feasible for smaller installations

Justification of more highly trained personnel and better utilization of the work staff

Analysis of information for municipal administration which is not otherwise readily available

Facility in handling expansions in work loads

Office space savings

Reduction in duplication of effort through the integration of operations

An information flow system will work where centralization is feasible. This step can be accomplished without regard to computers or any other equipment. The first requirement is an efficient system and the last consideration is the type of machine. General-purpose equipment now exists in sufficient variety and with sufficient flexibility to allow this approach in nearly all cases.

When an efficient information flow has been designed, alternative means of implementation must be compared. For medium and smaller organizations cost estimates should be developed involving the use of conventional key-driven or punched-card equipment. Data-processing functions with highly peaked characteristics should be scheduled for extra-shift operation performed by temporary help or contracted out to service bureaus. An example is the preparation of tax bills on a once-a-year basis.

Such studies provide the information needed to determine the feasibility of computer equipment. The first test check may eliminate further consideration of computers, by determining that the costs are not warranted. Let's assume, in a particular situation, that the cost of data input will be the same for conventional system and for a computer system—data input in this case refers to the original keystroking of data to get it into the system and should include only the personnel costs. If, after eliminating the personnel costs for data input, the remainder of the conventional integrated system does not have an operating cost for personnel and machine rental or amortization in excess of $10,000 per month, further consideration of the tape-operated, stored program computers is probably not warranted at this time. If the remainder of the system is in the range of $6,000 to $10,000 per month, a computer might be contemplated, but without magnetic tapes for sorting operations and record storage. Generalization is always dangerous and there will be some exceptions to the above figures. However, we offer them as being indicative of the orders of magnitude involved.

Conversion to a computer system using magnetic tapes is more difficult than to a card input-output computer system. There are many advantages to using tape-computers

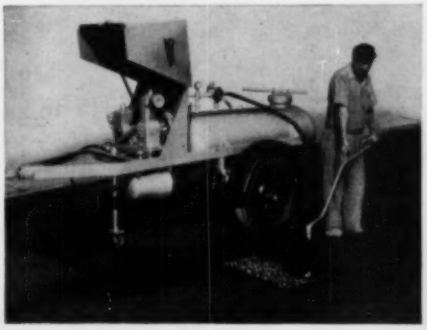
(Continued on page 165)

CUT-BACK AND EMULSION SPRAYERS

One-man operated, trailer mounted pressure sprayers for heated asphalt cut-backs and unheated emulsions. Also handle spraying of light oils, dust control solutions, cleaning compounds, paint stripping agents and many other liquids.

Models of 110 gallon and 200 gallon capacities are available with 1 cylinder gasoline engine powering single cylinder compressor. Kerosene-fired. Standard equipment includes 6' spray bar, 25' spray hose, three spray nozzles, filler hose and other necessary equipment.

Write for complete details!



BITUMINOUS DISTRIBUTORS
PATCHING EQUIPMENT
KETTLES
ASPHALT TOOLS
CUT BACK SPRAYERS

Aeroil SINCE 1917
MUNICIPAL EQUIPMENT

AEROIL PRODUCTS CO., INC.
69 WESLEY ST., SOUTH HACKENSACK, N.J.
4648 S. Western Ave. Chicago 9, Ill.
3217 Union Pacific Ave. Los Angeles 23, Calif.

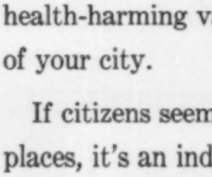
Does a fresh breeze turn foul in your town?

Quite possible! A fresh breeze may well pick up odors and health-harming vapors as it blows gently across the industrial areas of your city.

If citizens seem to be snooty . . . turn up their noses in public places, it's an indication of individual displeasure and a normal reaction to the foul fumes that may plague your community.

Very often industrialists don't realize that their plants are offenders. You may do them a favor by suggesting that they look into the problem . . . find out if they are contributing to the pollution of air in your town.

Suggest that they take action to correct air pollution at its source. They can easily and quickly determine how Catalytic Combustion systems work efficiently and economically in solving this serious and growing problem.



For information about the problem of industrial air pollution, a request will bring our new descriptive brochure. This brochure describes what industry in your area can do about air pollution. Write "Municipal Engineer, Department C."

CATALYTIC COMBUSTION CORPORATION
4725 Fourteenth Street • Detroit 8, Michigan
A SUBSIDIARY OF UNIVERSAL OIL PRODUCTS COMPANY

(Continued from page 163)

where the activity and cost involved can support this type of installation. The advantages include: greater speed and flexibility, and capability for employing the more advanced management control and decision-making techniques. Significant advances have been made in the form of programming aids in recent years. These are generally in the form of symbolic coding and various assemblers and compilers. They relieve the programmer of much of the repetitive work otherwise required and can reduce the time required for programming by as much as 50%.

A municipal-operations survey of the general nature described can be carried out by competent systems staff at relatively little expense and without disrupting the existing organization. The city government can benefit greatly from such a study. It will establish the economic limits of equipment cost which in turn determine the type of machine system feasible. Regardless of the type of data-processing equipment which can be justified, the study is likely to develop opportunities for improvement and cost reduction through consolidation and integration of operations, better utilization of personnel and machines, and more efficient procedures. ◄◄

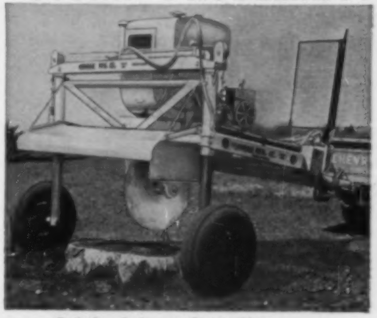
Austin Wins Safety Awards

In the past four years Austin, Texas, has won two Awards of Merit and one Award of Honor from the National Safety Council, plus 38 Safety Awards from the Texas Safety Association.

Austin has conducted its safety program on a city-wide basis since 1952. Each year, the number and cost of city-employee accidents, both personal and vehicle, has declined steadily.

The economic advantage to the taxpayers of the city is reflected in the many dollars saved in direct cost as well as indirect cost and human suffering to the workers. In 1952 the direct cost of accidents cost the city $114,900. In 1960 the direct cost was only $37,000. ◄◄

HERE'S HOW 800 CITIES SOLVED THEIR STUMP PROBLEM...



Original Low Cost Vermeer

POW-R-STUMP CUTTER

Rips Stumps To Shreds In Minutes!

You'll save hundreds of back-breaking man-hours and thousands of dollars annually . . . with a Vermeer Pow-R-Stump Cutter. The choice of tree experts everywhere! It's the modern way, the economical way to remove ugly stumps. A one-man operated unit. Removes stumps 10" below the ground. Write for complete information, low price and FREE demonstration.

VERMEER MANUFACTURING CO.
1452 W. WASHINGTON, PELLA, IOWA

NEW CATALOG!

MUNICIPAL
SUPPLIES
No. 163
ESTABLISHED 1908
W. S. DARLEY & CO.
CHICAGO 12

WRITE TODAY FOR
100-PAGE
Municipal Supplies Catalog
SPECIFY YOUR TITLE ON YOUR REQUEST
W. S. DARLEY & CO.
CHICAGO 12

"...on safer grounds with Anchor Fence,"

says O. C. Hufziger, Assist. Supt. in Chg. of Business, School Dist. of Pontiac, Mich.

"We wanted fencing to fill a number of needs at three schools in our district. An older Anchor installation and the cost-saving advantages of the new fencing convinced us we were on safer grounds with Anchor Fence. And we have been. It keeps children in the schoolyard, out of school driveways. It backstops a softball field at one school, encloses tennis courts at another. In fact, with its low-cost maintenance and high standard of quality, I'd recommend Anchor Fence to any other school district—with confidence."

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. For our free catalog, write: ANCHOR FENCE, 6565 Eastern Avenue, Baltimore 24, Maryland.

ANCHOR FENCE
Division of ANCHOR POST PRODUCTS, INC.

Plants in Baltimore, Md.; Houston, Texas; Whittier, Calif. Sold direct from factory branches in principal cities.

How to meet ever-increasing demands for services ...on a fixed budget

CASE
310
Shuttle Shift

DIGGING • LIFTING
HANDLE WITH CASE
Utility
LOADING • CARRYING

If your city's "growing pains" are giving you more work than you can handle with your present earthmoving equipment budget, it might be a good idea to analyze your *job needs* in terms of the size tractors you own. Naturally, you need big machines for heavy, continuous dirtmoving. But for hundreds of scattered, lighter projects, you'd be better off with several low-cost utility-size tractors.

Furthermore, you can buy *two*, easy-to-move Case 310 *Utility* crawler rigs for the price of *one* larger outfit . . . work two projects at a time, instead of one . . . move it quickly on inexpensive trailer behind any truck . . . speed up service on complaint calls and scheduled maintenance, with no increase in your equipment budget.

Yet with all its economy, the rugged Case 310 crawler gives you almost 3 tons of drawbar pull. It turns sharply with finger-tip pressure, reverses direction instantly, maneuvers huge loads in tight spots, with full power on both tracks. Powered by *high-torque Case gasoline or diesel engine*, 310 with loader (above) digs easily, gets heaped $\frac{3}{4}$-yd bucketloads, lifts 3500 lbs to full height, dumps clean with high clearance for fast dump-and-go. Rear scarifier, winch, backhoe, or other tools, give you wide-range versatility that keeps 310 busy every day.

Try a 310 crawler on your work. Find out how you can give more and faster service with no increase in equipment outlay. Call your Case Dealer now for free demonstration. Or write J. I. Case Co., Racine, Wis., Dept G1561 for specification information.

CU-L-292

Case 310 Angling Dozer puts extra drive behind the big blade to dig deep . . . carries more material out front. This dozer with pin-adjustment angling, cuts sharply, pushes directly from the outside-of-track . . . without side-draft or shearing off of tough loads. Model 310 is also available with hydraulic angling dozer, hydraulic power-tilt dozer and straight bulldozer.

CASE®

J. I. CASE CO., RACINE, WIS.

ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Review of Administrative Decisions—Traffic-Light Intervals

NEW YORK. *Weiss v. Fote*, 7 New York (2d) 579, 200 New York Supplement (2d) (Court of Appeals (highest court), April 21, 1960).

This case involved a challenge to the timing interval between red and green signals in the traffic lights at a major intersection in Buffalo. A negligence action had resulted in a jury verdict which assumed that the timing interval in effect there was too short. However, the New York Court of Appeals held that a governmental decision, carefully arrived at, on the proper timing interval was not subject to challenge and review by a jury in a tort suit, on grounds which separated this question from the usual situation of governmental immunity.

> "It is proper and necessary to hold municipalities and the state liable for injuries arising out of the day-by-day operations of government — for instance, the garden-variety injury resulting from the negligent maintenance of a highway—but to submit to a jury the reasonableness of the lawfully authorized deliberations of executive bodies presents a different question. . . . Acceptance of this conclusion, far from effecting revival of the ancient shibboleth that 'the king can do no wrong,' serves only to give expression to the important and continuing need to preserve the pattern of distribution of governmental functions prescribed by constitution and statute."

Two judges dissented, on the ground that this represented a return to the old theory of governmental immunity.

Racial Discrimination in Housing

NEW YORK. *Martin v. City of New York*, 201 New York Supplement (2d) III (Supreme (lower) Court, April 1, 1960).

New York City has a large body of state and local legislation directed against discrimination in various types of housing, culminating in a local law forbidding, in all private multiple dwellings, discrimination on grounds of race, color or religion. In this case a prominent real estate agent operating primarily in Greenwich Village challenged this provision directly on constitutional grounds, with a claim that his property rights included an inviolable right to choose his own tenants, according to any criteria he chose to use. The Court reviewed the substantial problems and authority on anti-discrimination in housing, and squarely upheld the provision in question.

> "A library of respectable proportions could be filled with the volumes written on the question which this application raises. And no small proportion of the space would be devoted to judicial opinion. These conditions dispense with the need for elaborate exposition but do make it difficult to make a succinct statement of the reasons prompting decision without appearing to pontificate. The bases of plaintiff's complaint with the statute is that it is an unjustified interference with his property rights in his business. He claims that a vital element in succesful renting is the selection of tenants and that any regulation which hampers the exercise of his judgment in this phase of his business is beyond the power of the state. To an extent he is correct. Just because a man is a Negro he is not, *ipso facto*, a desirable tenant. But the statute does not say that. It says the converse—because a man is a Negro he is not, *ipso facto*, an undesirable tenant."

Minimum Lot Area Exception Upheld

In proceeding relating to granting of application for exception under ordinance permitting erection of one-family dwelling on undersized lot, held where several other lots in block in question were of same size landowner granted exception. *Vinacco* v. *Zoning Board of Review of City of Warwick*, 152 A.2d 216 (R.I., June 16, 1959).

CAN YOU "GET ALONG" WITHOUT AUTOMATIC VOTING MACHINES?

Well, possibly you can . . . just as you "got along" 100 years ago without the automobiles, typewriters, adding machines, and telephones that enable you to operate so efficiently today . . .

BUT!

This Is Today . . . Not 100 Years Ago!

products for the public good

AUTOMATIC VOTING MACHINE

division of Rockwell Manufacturing Company

Jamestown, N. Y.

B-I-F POSITIVE CONTROL OF MATERIALS FLOW

"$25,000 PER YEAR SAVED!"---City "A"

"MORE IMPORTANT TO US THAN SAVINGS WAS INCREASED OPERATING EFFICIENCY RESULTING IN IMPROVED SERVICE AND CUSTOMER RELATIONS!"---City "C"

"AMORTIZED IN 26 MONTHS!"---City "B"

Dependable Transistorized **B-I-F** *Supervisory Control Cuts Operating Costs of Widespread Systems*

"$25,000 per year saved" and "Amortized in 2 years and 2 months" . . . typical testimonials received from the many municipalities using B-I-F supervisory control systems . . . names upon request. Systems range in size from relatively compact layouts to operations spread over 100 square miles with more than 200 stations, valves and similar functions to control.

One operator, at a centralized control panel, knows instantly when irregularities occur at distant points . . . takes immediate corrective action. Report-back verifies that a valve is open or closed, that a particular pump has started or stopped, or that . . . through visual indication . . . the desired function is correctly recorded.

B-I-F Supervisory Control Systems employ many advanced, but performance-proved techniques to provide centralized control at low operating cost. Dependable, safe system reduces equipment costs, operating costs . . . provides for low cost system expansion.

Request Bulletin 0240.20-3 for complete details. Write B-I-F Industries Inc., 463 Harris Ave., Providence 1, R. I.

B-I-F **Industries**

BUILDERS-PROVIDENCE • PROPORTIONEERS • OMEGA

METERS • FEEDERS • CONTROLS / CONTINUOUS PROCESS ENGINEERING

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Bonds—Parking Facility Revenue Bonds Held Valid

Provisions of enabling ordinance did not violate constitutional provision respecting power of municipalities to issue bonds, and ordinance did not constitute an unlawful delegation of power to parking consultant. *State* v. *City of Miami,* 119 So.2d 785 (Fla., Apr. 20, 1960)

City Council—Appointment of Councilman by Mayor Unauthorized

Fact that vacancy occurs in city council and council fails to fill such vacancy within 30 days does not authorize mayor to fill such vacancy by appointment. *State* v. *Jones,* 164 N.W. 2d 417 (Ohio, Feb. 3, 1960)

Curb Cut—Denial of Upheld

City did not act unreasonably in denying application for permission for construction of entranceway to vacant lot, where use of entranceway would create safety hazard and where landowners had reasonable means of access to lot through alley. *Bowling* v. *City of Somerset,* 333 S.W.2d 769 (Ky., Ct. App., Mar. 25, 1960)

Policemen—Compensation for Holidays and Vacations Not Taken

Under city resolutions complaint by former policeman stated cause of action for payment in money for holidays worked and vacations not taken. *Adams* v. *City of Modesto,* 3 Cal. Rptr. 561 (Cal., Mar. 18, 1960)

Tort Liability—
Skater Falls at City Rink—
City Not Liable

In action for injuries sustained in fall at municipally operated ice skating rink where ice was rough and pitted, held condition of ice did not constitute negligence in operation of rink where condition was obvious to plaintiff. *Cassady* v. *City of Billings,* 340 P.2d 509 (Mont., June 18, 1959)

Trailers—
Illegal Parking Violation Upheld

Where owner was using land in violation of ordinance by maintaining trailer on land which was not trailer camp without obtaining permit, held he acquired no right to continue such use after passing of superseding ordinance which also required permit. *Town of Wilson* v. *Kunstmann,* 96 N.W.2d 709 (Wis., June 2, 1959)

Zoning—Extension of Non-Conforming Multiple Dwelling Approved

In zoning variance case regarding multiple dwelling which was non-conforming in both use and dimensional requirements and extension was on portion of property owned by applicant at time of adoption of ordinance, held variance granted. *In re Grubb's Appeal,* 151 A.2d 599 (Pa., May 28, 1959)

Zoning—
Lot Size Ordinance Amendment Invalid

In action challenging validity of amendment to zoning ordinance relating to minimum lot sizes in residential areas, held sections providing for allowance of exceptions to lot size by planning board rather than by board of adjustments were invalid. *Swimming River G. & C. C.* v. *Borough of New Shrewsbury,* 152 A.2d 135 (N.J., June 17, 1959)

Zoning—Lumber Yard in Commercial Area Denied

In application for building permit to erect lumber yard and tin shop in area zoned "commercial," held permit denied and borough zoning ordinance restricting lumber yards to industrial zones was valid. *In re Kubia's Appeal,* 151 A.2d 625 (Pa., May 28, 1959)

Zoning—Ordinance Prohibiting Apartments Invalid

Where most of property owner's tract was unfit for single-family use and adjacent land on three sides was developed with apartments, held amendment of zoning ordinance restricting use of tract to one-family dwellings was arbitrary and unreasonable and therefore invalid. *Tarrant* v. *Incorporated Village of Roslyn,* 187 N.Y.S.2d 133 (N.Y. Sup. Ct., Nassau Cty., April 10, 1959)

MITTS & MERRILL
AMERICA'S NO. 1
BRUSH CHIPPER

MITTS & MERRILL ANNOUNCES THEIR 1960 MODELS—WITH MANY NEW FEATURES!

WHY SHOULD YOU BUY A MITTS & MERRILL BRUSH CHIPPER?

Because Mitts & Merrill gives the following features without extra charge:

1 Built-in, trouble-free blower
2 Staggered and tapered knives
3 Largest diameter cylinder of any Chipper on the market
4 Extra large feed chute with safety door and special supports
5 Three-way direction discharge chute
6 Adjustable chip direction bonnet
7 Adjustable to produce large or small chips
8 All-welded construction, safety-engineered for operator protection
9 Wears longer and has less moving parts
10 Works faster at lower speeds
11 Available in 7 different models
12 Backed up by more than 100 years of experience

the easiest to operate—the greatest efficiency —the lowest upkeep and maintenance cost.

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN
BUILDERS OF SPECIAL MACHINERY SINCE 1854

Wynene 18 polypropylene broom filler

keeps streets cleaner, cuts wear, reduces costs

ELGIN
ELGIN

With the rugged qualities of Wynene 18 broom filler, rotary sweepers take every type of street cleaning in their stride . . . under all conditions and in any weather. Wynene 18 has a superior resistance to constant abrasion and to most chemicals, greases and acids. It cleans with greater efficiency and lasts longer—cuts down replacements and consequent maintenance costs. Wynene 18 is a specially engineered fiber with a proven performance record.

Standard specifications: .075 x 105 x 26" in natural. Other gauges and lengths available to meet your specific requirements.

Distributors:

FREDERICK H. CONE & COMPANY, INC.
181 FRONT STREET • NEW YORK 38, N. Y.

MANUFACTURERS:

THE NATIONAL PLASTIC PRODUCTS COMPANY
Saran and Nylon Fibers—Nevamar High-Pressure Laminates—Wynene Extruded and Molded Products
ODENTON, MD. • NEW YORK, N. Y. • MIAMI, FLA. • CHICAGO, ILL.
DENVER, COLO. • PORTLAND, ORE. • LONG BEACH, CALIF. • SAN FRANCISCO, CALIF.

---

the "Arcrite"

TARCO
Arcrite

Sand and Chip Spreader

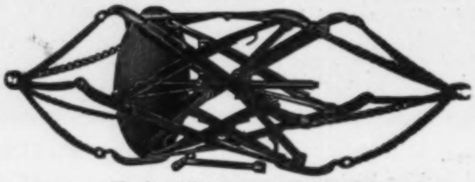
Engine: 1) single cylinder, air-cooled with recoil starter; 2) on pivoted base for **No Load starting;** 3) removed or installed in 5 minutes. **Material Spinner:** 18½" diameter, **stainless steel. Spinner Shaft:** 1¼" **diameter** mounted on sealed bearings with **bottom thrust bearing.** Fits any truck tailgate **without auxiliary material chute.** Gate-type material control. Safety guard rail. Hinged metal protective cover **with or without air filter. Stores upright** on its own frame.

See your TARCO Dealer or write for details

TARRANT MFG. CO.

23 Jumel Place **Saratoga Springs, N. Y.**

EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Open and in action removing roots and cake sediment like this.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. **Nappanee, Ind.**

RECENT CITY MANAGER APPOINTMENTS

R. P. Weatherford, Jr.
Kansas City, Mo.

Earnest D. Lindsay
Stanton, Calif.

Peter F. Lydens
Mount Airy, N. C.

James F. Roosevelt
Edison Twp., N. J.

Frank R. Saia
Clementon, N. J.

John R. Mansell
Long Beach, Calif.

CHAPMAN L. BONE, assistant manager of Torrance, Calif., has been appointed first manager of La Mirada, Calif. Mr. Bone was previously manager of Hermosa Beach, Calif.

JOHN C. CARR, SR., former mayor of Medford, Mass., has been appointed manager of that city, succeeding Edward G. Conroy.

RICHARD DI PRIMIO has been appointed manager of Marple Township, Broomall, Pa., succeeding Joseph McD. Mitchell, now manager of Newburgh, N. Y.

DON A. DODGE, former manager of Durant, Okla., for three years, has been appointed first manager of Stroud, Okla.

KESTER L. DOTTS, superintendent of utilities of Holly, Colo., has been appointed first manager of Petersburg, Alaska.

W. DAVID FRIZZELL, representative of the Portland Cement Association, was recently appointed first manager of Union City, Tenn.

THOMAS S. HENRY, manager of Brevard, N. C., was recently appointed manager of Melbourne, Fla., succeeding Douglas Ayres.

JAMES L. JENSEN, manager of Yankton, S. D., has been appointed manager of Arvada, Colo., succeeding Karl G. Williams.

RALPH R. JOHNSON, manager of Galena, Ill., for three years, has been appointed manager of Riverview, Mich., succeeding Robert W. Smalley. Mr. Johnson was formerly manager of Madison, S. D., and La Crosse, Kan.

EDWARD R. LAMB, manager of Hartland, Vt., has been appointed manager of Essex, Vt., succeeding William H. Treworgy.

THOMAS L. LAPOINTE, manager of Carmel, Maine, has been appointed manager of Thomaston, Maine, succeeding Archer Scribner.

EARNEST D. LINDSAY, former manager of Montebello, Calif., has been appointed the first manager of Stanton, Calif. Mr. Lindsay was previously manager of North Sacramento, Calif., and Durango, Colo.

PETER F. LYDENS, assistant manager of Winston-Salem, N. C., has been appointed first manager of Mount Airy, N. C.

JOHN R. MANSELL, city auditor of Long Beach, Calif., for the past ten years, has been appointed manager of that city, succeeding Samuel E. Vickers.

L. M. MCCONNELL, budget director of Metropolitan Dade County, Fla., has been appointed manager of Vero Beach, Fla., succeeding James W. Young. Mr. McConnell was previously manager of South Miami, Fla., Council Bluffs, Iowa, Warren, Pa., and Ketchikan, Alaska.

EVAN NORTON, manager of Norton, Va., for four years, has been appointed manager of Thomasville, N. C., succeeding W. T. Green, Jr.

ROBERT W. PALMER, employed by an engineering firm for the past ten years, has been appointed manager of Barre, Vt., succeeding Paul H. Hermann, now manager of Barrington, R. I. Mr. Palmer has 16 years' experience as manager of Ashland, Fort Fairfield, and Old Town, Maine, and Hastings-on-Hudson, N. Y.

JAMES F. ROOSEVELT, administrator of Rahway, N. J., has been appointed administrator of Edison Township, N. J.

ALFRED ROTH, vice-president of a business corporation, has been appointed manager of Crystal Lake, Ill., succeeding Karl H. L. Petermann.

FRANK R. SAIA, administrative assistant to the director of administration, New Haven, Conn., was recently appointed the first administrator of Clementon, N. J.

HORACE SHACKELFORD has been appointed first manager of Deer Park, Texas. Mr. Shackelford was previously with the Harris County Tax Office and Soil Conservation Service.

BRUCE C. SPRAGG, manager of Aston Township, Pa., has been appointed manager of Sparta, N. J., succeeding Allan J. Ofensend.

O. B. STOKES has been appointed manager of Valdese, N. C., succeeding Lee Ribet.

LOWELL J. TOOLEY, assistant village manager of Scarsdale, N. Y., has been appointed manager of that village succeeding Reeves Newsom who recently retired. Mr. Tooley was previously manager of Shorewood Hills, Wis.

GERARD S. VERGEER, manager of Klamath Falls, Ore., for three years, has been appointed manager of San Bruno, Calif., succeeding John C. Keefe. Mr. Vergeer was previously manager of Port Angeles, Wash., and Baker and Milton-Freewater, Ore.

ROBERT P. WEATHERFORD, JR., executive director of Plan for Progress, Inc., Phoenix, Ariz., for three years, has been appointed manager of Kansas City, Mo.

ORIN F. NOLTING
Executive Director
International City Managers' Association

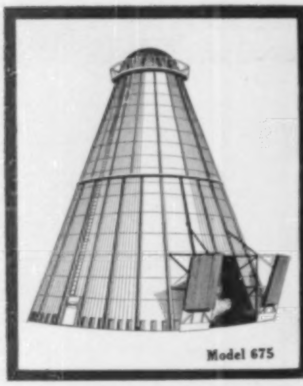
90 Cities Vie for All-America City Title

The All-America Cities competition already has an entry list of 90. This is the largest number ever to request entry blanks prior to the official opening date.

The All-America Cities Awards, co-sponsored annually by the National Municipal League and *Look* Magazine, are conferred each year on eleven U. S. communities in recognition of citizen action leading to outstanding civic achievement. The competition is now in its thirteenth year.

The jury selecting the 1961 winners will be headed by Dr. George H. Gallup, director of the American Institute of Public Opinion and chairman of the council of the National Municipal League. The finals will be held at the National Conference on Government, which will convene this year in Miami Beach, Fla., November 30th through December 2nd.

The closing date for completed entries is October 3, 1961. Official entry blanks and other information may be obtained through the All-America Cities Committee, National Municipal League, 47 East 68th St., New York 21, N. Y. ◄◄



- Burns up to 7 Tons per hour when burning continuously
- May be conveyor fed for greater capacity.
- Huge doors admit dump truck or bulldozer
- Easily erected on site by unskilled workmen.

INDUSTRIAL
BURN-O-MATIC
REFUSE BURNER

Manufactured in eleven different sizes . . . engineered for maximum burning efficiency. Burn-O-Matic is the ideal way to burn combustible trash and refuse. Big capacity . . . small cost.

YES | AIR POLLUTION CONTROL EQUIPMENT AVAILABLE

For information, write
Burn-O-Matic Div. AC-071
P. O. BOX 5182 MEMPHIS 12, TENN.
DESIGNED, ENGINEERED AND MANUFACTURED BY

INDUSTRIAL BLOW PIPE COMPANY

Where you want **nothing** to grow

SS WEED-KILLER

Gets them fast
Gets them all
Keeps them off

Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. . . . Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth. . . . Reduces fire hazard by eliminating flammable vegetation close to industrial locations. . . . Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass. . . . Cuts ground maintenance costs drastically. . . . One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

Dependable
DOLGE
WESTPORT, CONNECTICUT

LOWEST COST PIPE INSTALLATION

BY USING **HYDRAUGER***

***EARTH BORING TOOL**

Reg. U. S. Pat. Office

OPEN HOLE

- *UNDER STREETS*
- *UNDER FREEWAYS*
- *UNDER GARDENS*
- *UNDER PAVEMENT*

HYDRAUGER—

- *ELIMINATES TRENCHING*
- *REDUCES COSTS UP TO 90%*
- *BORE—UP TO 250 FT. 2 INCH TO 24 INCH*
- *NO FUMES OR SHOCKS*

Write for booklet—

HYDRAUGER CORP., Ltd., 681 Market St., San Fran. 5, Calif.

Please send without obligation, to me, the HYDRAUGER BOOKLET which shows relative costs and speeds of BORING as well as specifications of various Hydrauger models.

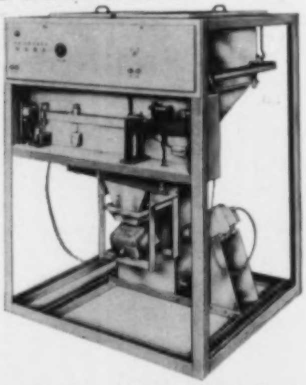
NAME ____________
ADDRESS ____________
CITY ____________
STATE ____________

FOR ACCURATE FEEDING OF DRY CHEMICALS

SYNTRON DIMINISHING BATCH

WEIGH FEEDER MACHINES

Designed for the accurate feeding of chemicals required in water filtration and sewage treatment plants. Syntron Diminishing Batch Weigh Feeder Machines provide a reliable continuous feed of materials in pounds per hour at any desired predetermined rate from 3 lbs to 300 lbs. per hour.



Write for a Syntron Catalog today

If your city is facing such a problem or has an application requiring accurate, continuous weigh feeding, consult your Syntron representative for information and quotations.

61WF

SYNTRON **SYNTRON COMPANY**
430 Lexington Avenue • Homer City, Pa.

CONVENTIONS—WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

July 9-14—St. Louis, Mo.

National Association of Sanitarians. Annual Meeting (Chase-Park Plaza Hotel). Exec. Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

July 10-12—Boulder, Colo.

American Society of Landscape Architects. Annual Meeting (Harvest House). Gen. Chairman, Sam L. Huddleston, 2395 S. Josephine St., Denver 10, Colo.

Aug. 9-11—University Park, Pa.

Pennsylvania Water Pollution Control Association. Annual Meeting (Pennsylvania State University). Sec.-Treas., J. R. Harvey, 996 S. Main St., Meadville, Pa.

Aug. 13-16—Chicago, Ill.

National Association of County Officials. Annual Meeting (Palmer House). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave., Washington, D. C.

Aug. 16-19—Cincinnati, Ohio

National Municipal Cemetery Conference of U. S. and Canada. Annual Meeting (Netherland-Hilton Hotel). Chairman, Vernon J. Birkhimer, 4809 W. Franklin St., Richmond 26, Va.

Aug. 20-25—Minneapolis, Minn.

National Shade Tree Conference. Annual Meeting (Leamington Hotel). Exec. Sec., L. C. Chadwick, 1827 Neil Ave., Columbus 10, Ohio.

Aug. 21-24—Washington, D. C.

Institute of Traffic Engineers. Annual Meeting (Sheraton Park Hotel). Exec. Sec., David M. Baldwin, 2029 K. St., N. W., Washington 6, D. C.

Aug. 26-30—Seattle, Wash.

American Municipal Association. Annual Meeting (Olympia Hotel). Exec. Dir., Patrick Healy, Jr., 1612 K St., N. W., Washington 6, D. C.

Sept. 2-9—Santiago de Compostela, Spain

International Federation for Housing and Planning. Annual Meeting (Hostal de los Reyes Catolicos). Sec. Gen., L. B. Gelpke, 2 Alexanderstraat, The Hague, Netherlands.

Sept. 4-8—Seattle, Wash.

National Tax Association. Annual Meeting (Olympic Hotel). Exec. Dir., Walter J. Kress, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

***Sept. 6-8—Atlanta, Ga.**

Georgia Water and Sewage Operator's School. Annual Meeting (Georgia Institute of Technology). Sec.-Treas., A. T. Storey, 650 Bishop St., N. W., Atlanta 13, Ga.

***Sept. 7-9—Havre, Mont.**

Montana Municipal League. Annual Meeting. Exec. Dir., Alfred F. Klinger, Box 456, Shelby, Mont.

***Sept. 10-13—Louisville, Ky.**

Kentucky-Tennessee Water Pollution Control Assoc. Annual Meeting (Brown Hotel). Sec.-Treas., S. Leary Jones, 602 Cordell Hull Bldg., Nashville 3, Tenn.

Sept. 11-16—Lisbon, Portugal

International Institute of Administrative Sciences Roundtable. Annual Meeting (Lisbon Hotel). Dir. Gen., Paul A. Shillings, 25 Rue de la Charite, Brussels, Belgium.

***Sept. 13-15—Saranac Inn, N. Y.**

American Water Works Association—New York Section. Semi-Annual Meeting (Saranac Inn). Sec.-Treas., Kimball Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City 1, N. Y.

***Sept. 13-15—Pierre, S. Dak.**

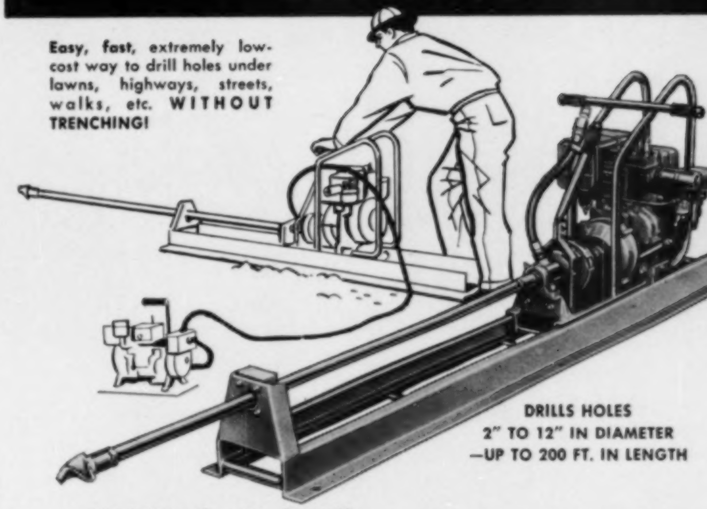
South Dakota Municipal League. Annual Meeting (St. Charles Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, S. Dak.

***Sept. 14-16—West Harwich, Mass.**

New England State and Municipal Finance Officers' Assoc. Annual Meeting (Hotel Belmont). Sec., James J. Costello, Town Accountant, Town Hall, Winchester, Mass.

(Continued on page 175)

NEW CMC *Wonder*
HORIZONTAL EARTH DRILL



Easy, fast, extremely low-cost way to drill holes under lawns, highways, streets, walks, etc. WITHOUT TRENCHING!

DRILLS HOLES 2" TO 12" IN DIAMETER —UP TO 200 FT. IN LENGTH

CMC Wonder Earth Drill cuts through tough earth formations, tree roots — even soft sandstone. *Takes only 30 seconds to drill a 2-inch hole, 5 feet. Drills holes up to 200 feet long with amazing accuracy.* Plenty of power (Briggs & Stratton 5.75 H.P. 4-cycle engine) for drilling holes up to 12" in diameter. Easily set up and operated, one man can handle it.

A specially designed *CMC ¾" pressure pump* is available to hook up to Wonder Drill to provide water pressure for flushing loose earth from drill bit area.

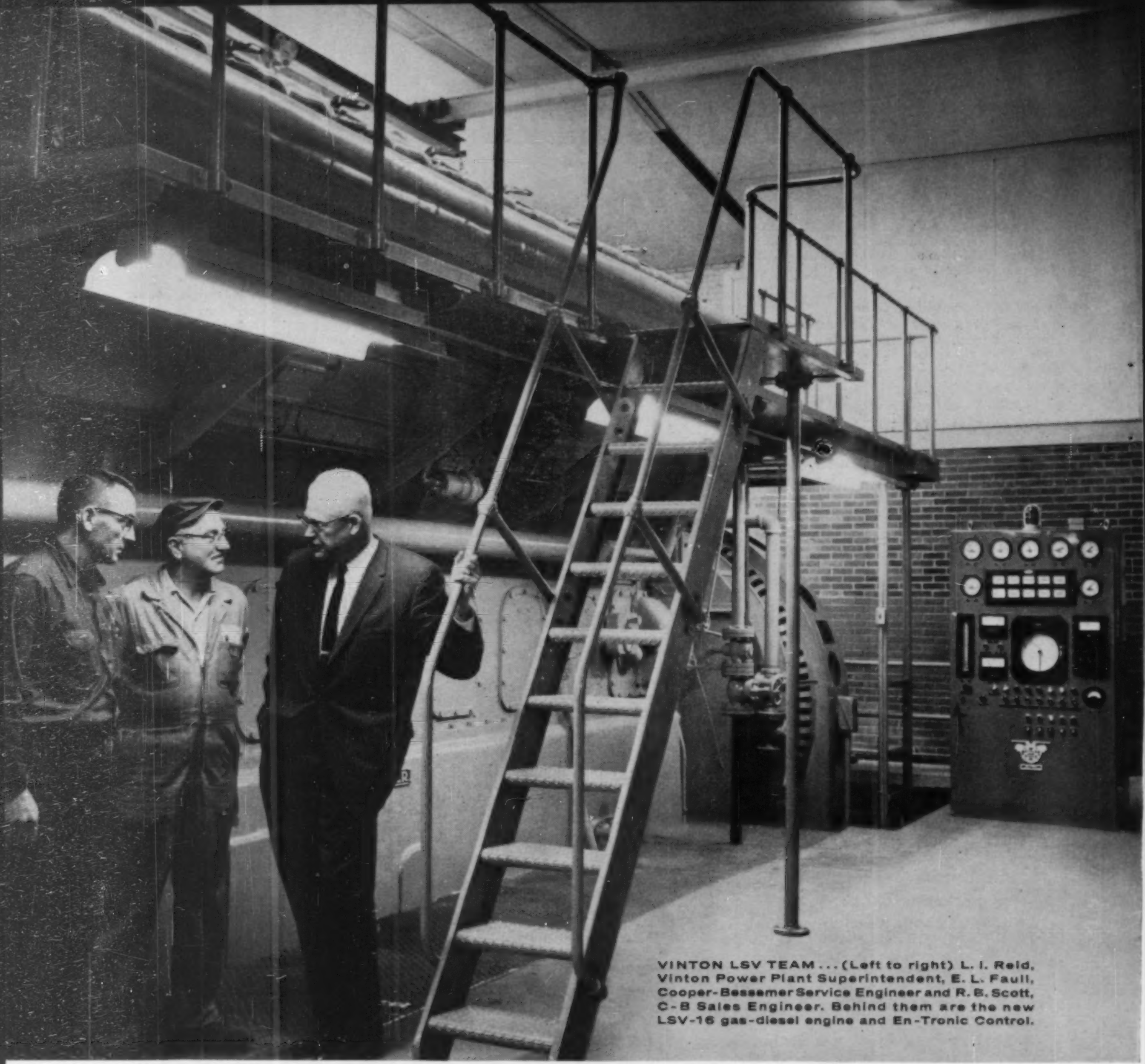
Eliminate unnecessary trenching and tearing-up-pavement-costs—install pipe at lowest cost by mailing coupon today for complete details on CMC Wonder Earth Drill.

FREE
CATALOG...MAIL COUPON

CONSTRUCTION
MACHINERY CO.
WATERLOO, IOWA

Rush catalog, prices on new CMC Wonder Earth Drill and CMC ¾" Pressure Pump.

NAME
COMPANY
ADDRESS
CITY STATE



VINTON LSV TEAM . . . (Left to right) L. I. Reid, Vinton Power Plant Superintendent, E. L. Faull, Cooper-Bessemer Service Engineer and R. B. Scott, C-B Sales Engineer. Behind them are the new LSV-16 gas-diesel engine and En-Tronic Control.

Vinton expands with fuel-saving LSV engine

Like many other progressive municipalities, Vinton, Iowa, faced up to expanding demand by increasing the output of its power plant. However, before making critical decisions, Vinton officials investigated thoroughly the performance records of equipment. They learned of the performance of Cooper-Bessemer LSV dual-fuel generator drives—how they perform in many other installations with fuel savings of up to 30%.

You see the result of this consideration in the photo here. Three key men in the expansion project are shown and identified just after they started the new Cooper-Bessemer 3520-hp, 16-cylinder supercharged engine. The 2500 kw installation also includes a Cooper-Bessemer En-Tronic System for complete control and protection of the new facilities.

We invite you to follow the example of Vinton. Examine the record. Learn how you can get the capacity you need and reduce costs, too. Call the nearest office for details on Cooper-Bessemer engines, compressors and En-Tronic Control.

Cooper-Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

COMPRESSORS: RECIPROCATING AND CENTRIFUGAL
ENGINES: GAS · DIESEL · GAS-DIESEL
JET-POWERED GAS TURBINES

Conventions—When and Where

(Continued from page 173)

***Sept. 14-16—Salt Lake City, Utah**

UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 14-16—Mackinac Island, Mich.**

MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Grand Hotel). Director, John H. Huss, 205 S. State, Ann Arbor, Mich.

***Sept. 17-19—Kansas City, Kans.**

LEAGUE OF KANSAS MUNICIPALITIES. Annual Meeting (Town House Hotel). Exec. Dir., E. A. Mosher, 112 West Seventh St., Topeka, Kans.

***Sept. 17-20—Tamiment, Pa.**

PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOC. Annual Meeting (Tamiment-in-Poconos Hotel). Exec. Sec., J. E. Slupecke, 2415 N. Front St., Harrisburg, Pa.

***Sept. 20-22—Atlanta, Ga.**

GEORGIA WATER AND SEWAGE ASSOCIATION. Annual Meeting (Georgia Institute of Technology). Sec., Waste Section, R. S. Ingols, Prof. School of Applied Biology, Georgia Tech., Atlanta, Ga.

***Sept. 20-22—Cleveland, Ohio**

OHIO MUNICIPAL LEAGUE. Annual Meeting (Pick-Carter Hotel). Exec. Sec., William H. Edwards, 60 E. Broad St., Columbus 15, Ohio.

***Sept. 20-22—Rapid City, S. Dak.**

SOUTH DAKOTA WATER & SEWAGE WORKS CONFERENCE. Annual Meeting (Sheraton Johnson Hotel). Sec., Don C. Kalda, S. Dak. State Dept. of Health, Pierre, S. Dak.

***Sept. 21-22—Scottsbluff, Neb.**

LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Meeting (Lincoln Hotel). Exec. Sec.-Treas., A. G. Wurst, 303 Continental Bldg., Lincoln 8, Neb.

***Sept. 21-23—Atlanta, Ga.**

AMERICAN INSTITUTE OF PLANNERS—Southeastern Chapter. Annual Meeting (Dinkler-Plaza Hotel). Pres., Philip A. Stedfast, City Hall, Columbia, S. Car.

***Sept. 24-26—Norfolk, Va.**

VIRGINIA MUNICIPAL LEAGUE. Annual Meeting (Golden Triangle and Monticello Hotels). Exec. Sec., Harold I. Baumes, 905 Travelers Building, Richmond 19, Va.

***Sept. 24-26—Moncton, N. B., Can.**

AMERICAN WATER WORKS ASSOC.—Canadian Section, Maritime Branch. Annual Meeting (Brunswick Hotel). Sec., J. D. Kline, Public Service Commission, P. O. Box 608, Halifax, Nova Scotia, Canada.

Sept. 24-27—Minneapolis, Minn.

AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting (Municipal Auditorium). Exec. Dir., Robert D. Bugher, 1313 East 60th Street, Chicago 37, Ill.

***Sept. 24-28—New York, N. Y.**

NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICIALS. Annual Meeting (Waldorf-Astoria Hotel). Gen. Counsel, Charles S. Rhyne, 839 17th St., N. W., Washington 6, D. C.

Sept. 24-28—Poland Spring, Me.

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Poland Spring House). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

Sept. 24-28—Rochester, N. Y.

AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Meeting (Manger Hotel & War Memorial Bldg.). Exec. Sec., Alfred B. La Gasse, Oglebay Park, Wheeling, West Virginia.

Sept. 24-29—St. Louis, Mo.

ILLUMINATING ENGINEERING SOCIETY. Annual Meeting (Chase Park Plaza Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

Sept. 25-28—Las Vegas, Nev.

INTERNATIONAL ASSOC. OF FIRE CHIEFS. Annual Meeting (Hotel Sahara). Exec. Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

***Sept. 25-29—Seattle, Wash.**

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. Annual Meeting (Olympic Hotel). Managing Director, Hal Colling, 610 South Broadway, Los Angeles 14, Calif.

***Sept. 26-28—Cumb'land Falls Pk., Ky.**

KENTUCKY MUNICIPAL LEAGUE. Annual Meeting (Dupont Lodge). Exec. Sec., Carl B. Wachs, Reynolds Bldg., 670 S. Broadway, Univ. of Kentucky, Lexington, Ky.

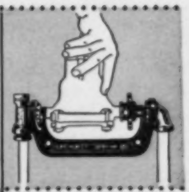
(Continued on page 176)

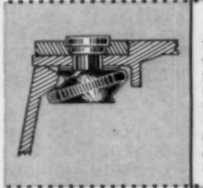
a few plain words about...

WATER METERS!

METER YOKES

The Ford Yoke dates back to 1911. Its outstanding success resulted in a wide variety of meter holding devices called yokes. But the Ford yoke as now made offers advantages not obtainable in any other type of meter setting. Millions are in use.



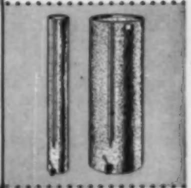


LIFTER WORM LOCK

The original Ford Worm Lock was introduced almost forty years ago. Because of its simplicity, safety and powerful screw-jack action it is now widely used. The Lifter feature, a recent improvement, provides automatic attachment of the key on unlocking.

CALIBRATED TESTING TANKS

Before Ford Calibrated Testing Tanks were put on the market about 35 years ago, such meters as were tested were checked against gravimetric scales, which were complicated and inconvenient. Thousands of Ford Tanks are in service, in sizes from one to 1000 gallons.



METER VALVE ●

The Meter Valve is a close-coupled combination of an inverted key valve and a meter connection. It saves material, pipe joints and space in the meter setting. Ford Meter Valves bear the trademark name of Ringstyle Valves.

THE KORNERHORN

In a vertical basement pipe, against the wall or in a corner, the Kornerhorn makes a most satisfactory meter setting. Installation is fast and economical as pipe threading is eliminated. Send for detailed information.

Meters can *earn* real money. In most water utilities they measure and determine *all* the income.

It is good business to accord meters the treatment they deserve as valuable equipment and as sources of revenue. Such enlightened treatment includes settings which provide protection, easy availability for reading, and trouble-free meter changes for proper maintenance.

For 60 years our company has served thousands of water utilities in providing better water meter settings. Submit *your* problems to Ford.

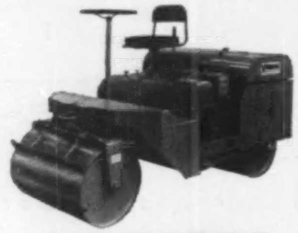
THE FORD METER BOX COMPANY, INC.
FOR BETTER WATER SERVICES
WABASH, INDIANA

FORD

ROLCOR

AMERICA'S LEADING
"COMPACT" ROLLERS

✓"Job Sized" ✓Self-Propelled
✓Top Quality Construction



VIBRAPAC

A two-ton vibrating roller producing high density compaction equal to static rollers weighing 10 tons. Designed specifically for asphalt and soil compaction without surface corrugation. Adaptable as a static roller, too. Outstanding for high density compaction of large or small areas.

STA-PAC

A two-ton static roller with size and maneuverability ideal for rolling jobs of all kinds. Equipped with front and rear sprinkler bars. A fast, low cost, economical roller.

ROLLPAC

The top selling one-ton roller with contractors, cities, institutions and landscapers. It's preferred for its quality, rugged construction and low maintenance. You won't outgrow the usefulness of Rollpac.

For Full Information Write:

ROSCO MANUFACTURING CO.
Rolcor Division
3118 SNELLING AVE.
MINNEAPOLIS 6, MINN.

Conventions—When and Where

(Continued from page 175)

***Sept. 27-29—Milwaukee, Wis.**

American Water Works Assoc.—Wisconsin Section. Annual Meeting (Schroeder Hotel). Sec.-Treas., Harry Breimeister, Room 607, Municipal Bldg., Milwaukee 2, Wis.

Sept. 30-Oct. 5—Montreal, Que., Can.

International Assoc. of Chiefs of Police. Annual Meeting (Hotel Queen Elizabeth). Exec. Dir., Leroy E. Wike, 616 Mills Bldg., 17th & Pennsylvania Ave., N.W., Washington 6, D. C.

***Oct. 1-3—Springfield, Mo.**

Missouri Water Pollution Control Assoc. Annual Meeting (Kentwood Arms Hotel). Sec.-Treas., Jack K. Smith, P. O. Box 154, Jefferson City, Mo.

***Oct. 1-4—Liberty, N. Y.**

County Officers' Assoc. of the State of N. Y. Semi-Annual Meeting (Grossingers Hotel). Exec. Sec., C. L. Chamberlain, 190 State St., Albany, N. Y.

***Oct. 1-4—Philadelphia, Pa.**

Pennsylvania League of Cities. Annual Meeting (Bellevue Stratford Hotel). Exec. Dir., John N. O'Neil, 2415 North Front St., Harrisburg, Pa.

Oct. 1-5—Denver, Colo.

Public Personnel Association. Annual (International) Meeting (Denver Hilton Hotel). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

Oct. 1-6—Detroit, Mich.

National Recreation Congress. Annual Meeting (Cobo Hall). Sec., Charles E. Hartsoe, 8 West 8th St., New York 11, N. Y.

***Oct. 2-4—Taos, N. M.**

American Water Works Association—Rocky Mountain Section. Annual Meeting (Katchina Hotel). Sec.-Treas., Hal Kepner, 550 Alcott, Denver, Colo.

***Oct. 2-4—Taos, N. M.**

Rocky Mountain Sewage and Industrial Wastes Assoc. Annual Meeting (Katchina Hotel). Sec. Treas., John W. Hernandez, 408 Galisteo St., Santa Fe, N. M.

***Oct. 3-5—Norman, Okla.**

National Airport Conference. Annual Meeting (University of Oklahoma). Chairman, Austin B. Brough, Div. of Aviation, City Hall, Philadelphia, Pa.

***Oct. 4-6—Jamestown, N. Dak.**

North Dakota Water Pollution Control Assoc. Annual Meeting (Gladstone Hotel). Exec. Sec., Norman L. Peterson, State Department of Health, Bismark, N. Dak.

***Oct. 4-6—Jamestown, N. Dak.**

North Dakota Water & Sewage Works Conference. Annual Meeting (Gladstone Hotel). Sec. Treas., W. Van Heuvelen, Capital Bldg., Bismarck, N. Dak.

***Oct. 5-6—Ithaca, N. Y.**

New York-New Jersey Public Works School. Annual Meeting (Hollister Hall, Cornell University). Sec., J. W. Spencer, Highway Research and Extension Engineer, N. Y. State College of Agriculture, Cornell University, Ithaca, N. Y.

***Oct. 6-7—Twin Falls, Idaho**

American Water Works Association—Inter-Mountain Section. Annual Meeting (Rogerson Hotel). Sec., Max Snell, Supt. Power and Water, Soda Springs, Idaho.

Oct. 8-11—New York, N. Y.

National Institute of Governmental Purchasing. Annual Conference (Hotel Commodore). Exec. Vice-Pres., Albert H. Hall, 1001 Connecticut Ave., N. W., Washington 6, D. C.

Oct. 8-11—Montreal, Que., Can.

International Assoc. of Assessing Officers. Annual Meeting (Queen Elizabeth Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 9-11—Cincinnati, Ohio

International Municipal Signal Assoc. Annual Meeting (Hotel Netherland-Hilton). Conference Mgr., Irwin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 9-12—Milwaukee, Wisc.

Water Pollution Control Federation. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

Oct. 9-13—Denver, Colo.

American Association of State Highway Officials. Annual Meeting (Denver-Hilton Hotel). Exec. Sec., A. E. Johnson, 917 National Press Bldg., Washington 4, D. C.

Oct. 16-19—Dallas, Texas

American Transit Association. Annual Meeting (Adolphus and Baker Hotels). Gen. Sec., A. W. Baker, 355 Lexington Ave., New York 17, N. Y.

Oct. 16-20—New York, N. Y.

American Society of Civil Engineers. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William H. Wisely, 33 West 39th St., New York 18, N. Y.

Oct. 16-20—Chicago, Ill.

National Safety Congress. Annual Meeting (Conrad Hilton Hotel). Sec.-Treas., R. L. Forney, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 17-20—Los Angeles, Calif.

United States Civil Defense Council. Annual Meeting (Ambassador Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Ga.

Oct. 25-27—Sacramento, Calif.

American Water Works Assoc.—California Section. Annual Meeting (Senator Hotel). Sec.-Treas., Frank F. Watters, California Public Utilities Com., State Bldg., Civic Center, San Francisco 2, Calif.

***Oct. 29-31—Wichita, Kans.**

National Association of Municipal Utilities. Annual Meeting (Broadview Hotel). Asst. Sec., A. D. McGuire, P. O. Box 99, Overland Park, Kans.

Oct. 29-Nov. 1—Washington, D. C.

National Assoc. of Housing and Redevelopment Officials. Annual Conference (Hotel Sheraton-Park). Exec. Dir., John D. Lange, 1313 E. 60th St., Chicago 37, Ill.

Nov. 12-17—London, England

Public Works & Municipal Services Congress. Annual Meeting (Olympia Hotel). Write: The Municipal Agency Ltd., 3/4, Clements' Inn, London, W. C. 2, England.

Census Figures Reveal That Populous Areas Attract More People

The nation's urban areas apparently respond to that old farmer's maxim, "Him who has, gits." A study of census figures by the Metropolitan Life Insurance Company shows that the nation's population is increasingly being concentrated in those areas which already have the largest number of residents. In predominantly rural areas the population increased by less than 1%. This pattern of growth prevailed in every section of the country.

In 1950, counties with 200,000 or more population had a total of 68,730,000 people, or 45% of the nation's total. By 1960, these same counties had a population of 84,261,000 or 47% of the national total.

In areas under 25,000, the population increased only 0.9%. Other population increases, 1950 to 1960, were as follows: for counties of 25,000-49,999, 11.4%, in 100,000-199,990 population areas, 33.6%, and in those with 200,000 or more residents, 22.6%.

This growth in the larger counties contrasts sharply with a population decrease which occurred in large northeastern and midwestern cities.

While the Plains States in the North show the greatest population losses, the more populated areas of the West show the most rapid growth (45%).

The Mountain States experienced an 84% gain in the 100,000-199,999 resident group and 59% gain in the next larger and the next smaller group of counties.

Population gain was rapid in the larger southern counties (100,000 or over) but below the national average in the smaller ones. The East South Central States and West Virginia, Oklahoma, and Arkansas actually lost population — apparently because they have been experiencing a considerable migration out of their rural areas.

In relation to relative population growth with size of county, the Northeast showed a smaller variation than elsewhere in the country, with increases ranging from 4 to 20%.

In all classifications of counties except the least populous, the Northeast's population increases were below the averages for the country as a whole. ◄◄

TWO PIECE

5¼" two-piece sliding or screw type cast iron valve boxes, covering 4" through 10" valves.

ADJUSTABLE
VALVE
BOXES

THREE PIECE

5¼" three-piece valve boxes supplied with bases for 4" through 24" valves. Interchangeable parts.

Manufactured to the highest standards for sure service.

A complete line of service and roadway boxes, manhole rings and covers. (Covers marked gas or water)

OPELIKA FOUNDRY CO.
OPELIKA, ALABAMA
P. O. Box 326 • Phone SHerwood 5-7672

HERE is the answer to
EMERGENCY BARRICADES
Lightweight,
Easily-Adaptable

SAFE-T-CONE
TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.

28-Inch
18-Inch
12-Inch
AVAILABLE IN 3 SIZES

Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write
RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

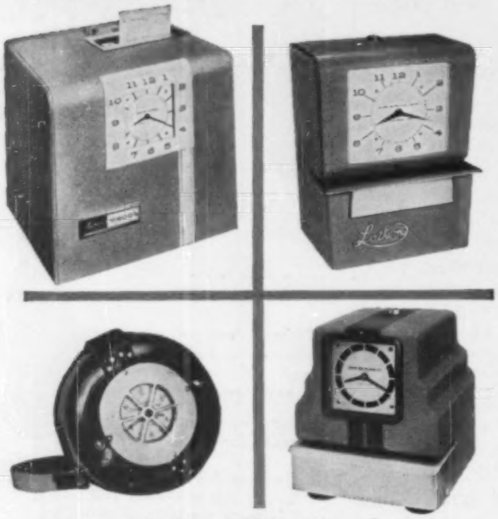
ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

SUPERLINER MODEL . . . REAR ENGINE DRIVE

You'll be proud of this modern, streamlined street flusher! Regularly furnished with 3 nozzles, 600 G. P. M. pump, 800 to 3000 gallon tank, mechanical controls, vertical valves. Motor enclosed in rear compartment is quickly accessible for servicing. Get literature, prices and delivery from your Etnyre dealer or write us today.

E. D. ETNYRE & CO., Oregon, Illinois

time . . . city managements' greatest single cost factor!



control it effectively with Lathem

PAYROLL RECORDERS
JOB TIME RECORDERS
TIME STAMPS
WATCHMAN CLOCKS

You can eliminate time leaks and increase the efficiency of all departments with a Lathem machine. Precision-built for a long life of care-free service, Lathem machines are designed and engineered to meet all of your time recording needs with absolute accuracy and maximum speed.

There is a Lathem machine for (1) payrolls, (2) parking lots, (3) garages, (4) public buildings and watchmen's rounds, (5) dating and numbering papers, (6) mail arrival, (7) booking and releasing prisoners, (8) records of sequence handling, and (9) entry of important records and deeds as well as many other activities where an accurate time record is essential.

Write, wire or call for complete information.

LATHEM TIME RECORDER COMPANY

92 Third Street, N. W., Atlanta, Georgia

GENTLEMEN: Without obligation, please send me full information about Lathem time equipment, including prices.

NAME________________

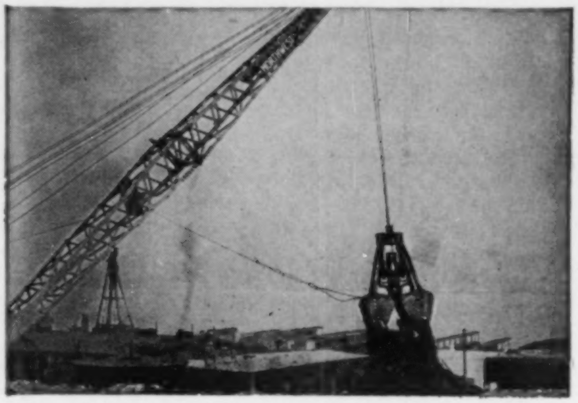
POSITION________________

STREET________________

CITY________________ ZONE____ STATE________

No spot for a breakdown!

KEEP IT GOING AT ITS BEST...USE ONLY GENUINE HAYWARD REPAIR PARTS!



Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise costs and disrupt schedules.

Anticipate any possible breakdown.
Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.
Builders of Better Buckets Since 1888

The "Pick" of
MINNEAPOLIS

THE Pick-Nicollet

600 *Rooms with bath from* $6.00

NO CHARGE FOR CHILDREN
FREE RADIO AND TV
AIR-CONDITIONED ROOMS

Delicious Cuisine and Beverages

- **WAIKIKI ROOM**
- **JOLLY MILLER**
- **COFFEE SHOP**

ALWAYS THE BEST · FOR EVERY GUEST · ALBERT Pick HOTELS

FEderal 3-3177
Thomas P. Ryan, mgr.

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Water Pollution Report

PROCEEDINGS OF THE NATIONAL CONFERENCE ON WATER POLLUTION—*U. S. Department of Health, Education and Welfare, Public Health Service. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington* 25, *D. C.* 607 *pp.* $2.25.

The official proceedings of the National Conference of Water Pollution called at the request of President Eisenhower. The volume contains eight chapters, the first seven devoted to individual sessions and the eighth to a summary of recommendations. Three appendices consist of additions made to the record, a list of exhibits and film showings, and the names of the more than 80 participants in the conference. The material is based on the formal presentations of speakers and discussants, supplemented by stenographic transcript of floor and panel discussions.

Municipal Operating Manual

GENERAL ORDERS MANUAL. *Office of the City Manager, Richmond, California.* 1961. 50*pp.*

Richmond, Calif., has assembled its various administrative operating instructions issued over the years as General Orders, Departmental Memos, Bulletins and Special Orders. The New General Orders Manual is the first of its kind that Richmond has issued and should be of interest to many city administrators.

Planning

AUTOMATIC DATA PROCESSING—ITS APPLICATION TO URBAN PLANNING. *Institute for Community Development and Services, Continuing Education Service, Michigan State University, East Lansing, Mich.* 1961. 114*pp.* $2.

This presents a series of talks originally offered as a seminar in urban planning at Michigan State University, in 1959. The fact that planning leans so heavily on gathering and storing of information makes the use of punched cards and data processing most applicable. The text should encourage use of this device and may be another way to encourage intermunicipal cooperative planning.

National Parks

OUR NATIONAL PARK POLICY—*By John Ise. The John Hopkins Press, Homewood, Baltimore* 18, *Md.* 1961. 701*pp.* $10.

Here is a narrative of the political and administrative struggles that led to the creation of the national park system and an analysis of the problems that still beset it. Today when rapid land development threatens to engulf much of our open space, such a book performs a real service in alerting conservationists and plain citizens to the great value of our national parks.

Human Values

THE HUMAN SIDE OF URBAN RENEWAL—*By Martin Millspaugh and Gurney Breckenfeld. Edited by Miles L. Colean. Ives Washburn, Inc., 119 West 40th St., New York* 18, *N. Y.* 1960. 233*pp.* $4.50.

How citizens of Baltimore, Chicago, New Orleans and Miami rehabilitated their own neighborhoods and the changes brought to their own lives is herein interestingly reported. Written under a grant from the Fund for Adult Education, it gives an illuminating view of the human values of urban renewal.

The authors are old hands at investigating and writing about slum conditions and the editor is one of the nation's foremost housing economists. This will provide a useful text on the human problems to be solved and the benefits to be gained from urban renewal efforts particularly when motivated by citizen groups.

Marinas

THE FUTURE OF PLEASURE BOATING—*Boating Associates, Cambridge, Mass.* 1960. 157*pp.* $15.

One chapter of this book delves into the problem of the dearth of marinas. More than 10,000 boating facilities presently exist, but only 2,100 of these are first-class operations. Development and operating problems plague some sites whether government-owned or privately-owned.

(Continued on page 180)

WEST VIEW, PA. *chose a* **STEEL TANK**

An entire hilltop was removed to make room for this 5,000,000 gallon steel reservoir built for the Municipal Authority of the Borough of West View, Pa. A striking example of special architectural detailing and exacting craftsmanship combined to provide visual appeal in this high-value residential district. Decorative pilasters and a two-tone blue color scheme complete a most unusual and applauded neighborhood feature.

Designed by William Murdoch, Consulting Engineer, Pittsburgh, Pa.

. . . the *only* type of water storage tank built to AWWA standards!

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

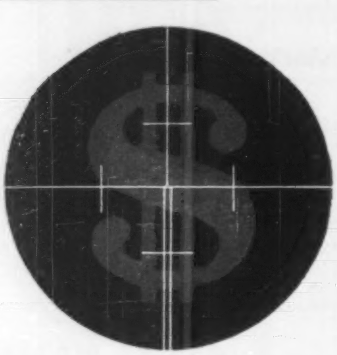
. . . these are inherent qualities of welded *steel* construction. Compare *steel* tanks with other types . . . you'll see why "steel tanks store water best." You can always specify *steel* tanks with confidence.

For your copy of the latest steel tank brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

STEEL PLATE FOUNDED FABRICATORS 1933 ASSOCIATION

DOWN TO FUNDAMENTALS



WHAT PRICE PRECISION?

KERN instruments give you *more instrument for your money* through designing that strips away all non-essentials without sacrificing operational precision, and fast, reliable accuracy of results. Every KERN surveying instrument, though economically priced, embodies the features of a top quality Swiss product.

PROMPT, RELIABLE SERVICE
FACTORY TRAINED TECHNICIANS

KERN
INSTRUMENTS, INC.
FUNDAMENTAL SURVEYING EQUIPMENT
120 Grand St., White Plains, N.Y.

GKO E Builder's Level (with Erecting Telescope)

- *Erecting 18x telescope, AR coated min. focus 3 ft.*
- *Horizontal circle optional.*
- *Probable error in 1 mi. ±0.04 ft.*
- *Simple to use for occasional as well as experienced operators.*
- *Rugged, compact, basic in design.*
- *So reasonably priced everyone can afford it.*

For Full Information Write for Brochure K605

(Continued from page 179)

Land Uses

LAND FOR THE FUTURE—*By Marion Clawson, R. Burnell Held and Charles H. Stoddard. The John Hopkins Press, Homewood, Baltimore* 18, *Md.* 1960. 570*pp.* $8.50.

Per-capita income and population in the United States will nearly double in the next 40 years. How the increased demand and fixed area can be reconciled is the question the authors attempt to answer. Here they analyze the changing pattern of land use in the past, in urban, recreational, agricultural, forestry, grazing and miscellaneous categories. In so doing, it provides a study of alternatives in land use in the future.

Nonpartisanship

THE POLITICS OF NONPARTISANSHIP, A STUDY OF CALIFORNIA CITY ELECTIONS—*By Eugene C. Lee. University of California Press, Berkeley, Calif.* 1960. 232*pp.* $4.75.

Nonpartisanship, so popular particularly in local elections, is here analyzed. The text attempts to evaluate and explain its role in American city politics in order to determine its value as a vehicle for providing more meaningful competition for public office. The study is based on an intensive investigation of six typical California cities of over 5,000 population and from over 300 mayors, city managers and others close to these cities.

Fiscal Policy

PUBLIC FINANCE—*By Earl R. Rolph and George F. Break. The Ronald Press Co.,* 15 *East 26th St., New York* 10, *N. Y.* 1961. 586*pp.* $7.50.

Drawing mainly on American experience in fiscal affairs but also including public financing as practiced in other countries, the authors attempt to give a logical and coherent exposition of public finance. They set forth various theoretical and technical issues, indicating the topics worthy of serious attention. They have tried to make the relationship of government expenditure to its debts and revenues more meaningful. Of special interest to city officials is a chapter devoted to the financial problems arising out of rapidly expanding metropolitan regions.

The Community

COMMUNITY DEVELOPMENT SERIES—*Construction and Civic Development Department, Chamber of Commerce of the United States,* 1615 *H St., N. W., Washington* 6, *D. C.* 1961. 7 *booklets.* $3 *the set,* 50 *cents each.*

The following subjects are covered by these booklets: Balanced Community Development; Community Analysis—Foundation for Decision Making; Comprehensive Planning—Guide for Community Growth and Change; Planning Urban Renewal Projects; Modernizing Local Government; Financing Community Development; Community Leadership—Key to Local Development. These are excellent guides to constructive community development.

ADMINISTRATION AND GOVERNMENT

GENERAL—Metropolitan Agencies and Concurrent Office-Holding: A Survey of Selected Districts and Authorities (a study of authorities, districts and similar agencies that provide services embracing a metropolitan region). Bureau of Public Administration, University of California, Berkeley, Calif. 1961. 31pp. $2.

Re-new your structures with GUNITE!

★ **durability**
★ **economy**
★ **flexibility**

- DAMS
- RESERVOIRS
- TUNNELS
- GRAIN ELEVATORS
- BREAKWATERS
- CONCRETE TANKS
- FILTER PLANTS
- STADIUMS
- SEA WALLS
- PIPE LINES
- SEWERS
- STACKS
- BRIDGES

estimates, specifications and surveys made free of cost to you. write, wire or call MElrose 4-8120

INDIANA GUNITE & CONSTRUCTION CO., Inc.
ENGINEERING—CONSTRUCTION
CONTRACTS TAKEN ANYWHERE

1555 Helton Street
Florence, Alabama

1734 Villa Avenue
Indianapolis, Indiana

FINANCE AND TAXATION

VIRGINIA—Salaries and Working Conditions of Firemen in Virginia Fire Departments. Virginia Municipal League, 905 Travelers Bldg., Richmond 19, Va. 1961. 9pp. $1.

NOTEWORTHY ANNUAL REPORTS

GRAND JUNCTION, COLO.—Progress to Date. The Daily Sentinel, Grand Junction, Colo. 1960. 12pp. Newspaper Supplement.

KENOSHA, WIS. — Annual Report of the Water Department and Sewage Treatment Plant. City of Kenosha Water Department, Kenosha, Wis. 1960. 65pp.

NEW YORK, N. Y.—The Public Works Department Annual Report 1960 of the City of New York. Department of Public Works, City Hall, New York 7, N. Y. 1960. 79pp.

PLANNING, ZONING, HOUSING

BINGHAMTON, N. Y.—Central Binghamton 1970. Broome County Planning Board, 209 County Court House, Binghamton, N. Y. 1961. 82pp.

COLUMBIA, S. C.—In Step With Tomorrow. Department of City Planning, City Hall, Columbia, S. C. 1961. 87pp.

PHILADELPHIA, PA.—City on the Move—Section of the Philadelphia Inquirer. Office of the City Representative, Room 201, City Hall, Philadelphia, Pa. 1961. 18pp.

RARITAN TOWNSHIP, N. J.—Township of Raritan, Master Plan Studies. Herbert H. Smith Associates, P. O. Box 206, West Trenton, N. J. 1960. 37pp.

WARREN COUNTY, N. J.—Land Use and Zoning. Warren County Regional Planning Board, Court House, Belvidere, N. J. 1961. 33pp. $1.50.

REPRESENTATIVE MUNICIPAL BOND ISSUES
From May 3rd to June 6th, 1961

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
5/ 3/61	Miami Conservancy Dist., Ohio	2,715	Miami Shores Development	16	3.50	....
5/ 8/61	Madison, Wis.	1,800	Street Impr. (Corporate Purpose)	10½	3.00	....
5/ 9/61	Albany Co., N. Y.	4,400	Airport Acquisition	6½	2.90	2.87
5/ 9/61	Cincinnati, Ohio	5,000	Urban Redevelopment Impr. (limited tax)	21	3.25	3.18
5/16/61	Portland Water Dist., Me.	1,000	Water	20	3.38	3.36
5/17/61	Framingham, Mass.	220	Sidewalk (gen. obl.)	3	3.00	....
5/19/61	Hoboken, N. J.	2,545	Sewage Disposal (Series E)	20⅔	3.95	....
5/22/61	Cedar Rapids, Iowa	1,700	Airport	11½	3.00	2.98
5/23/61	Owensboro, Ky.	25,000	Electric Light & Power Revenue	30	3.90	3.96
5/24/61	Bergen Co., N. J.	5,460	Park	9⅔	3.05	3.05
5/24/61	Houston, Texas	1,000	Civic Center	10½	....	3.34
5/24/61	Racine, Wis.	1,270	Corporate Purpose (gen. obl.)	5½	3.38	3.16
5/25/61	Salem, Mass.	125	Macadam Pavement	3	3.00	....
5/31/61	Fairbanks, Alaska	2,100	Public Improvement	....	....	3.89
6/ 1/61	Camden Co., N. J.	1,655	Park	8⅙	3.15	....
6/ 1/61	El Torro Water Dist., Calif.	1,900	Water (gen. obl.)	....	....	5.66
6/ /61	Sacramento Mun. Utility Dist., Calif.	18,750	Upper American River (rev.)	....	3.77	3.75
6/ 1/61	Westfield, Mass.	718	Water System Impr. (gen. obl.)	11	3.20	....
6/ 5/61	University Heights, Ohio	1,000	General Sewer Impr.	11	3.50	....
6/ 6/61	Portland, Me.	1,275	City Permanent Impr.	9½	3.10	....

Compiled from THE WEEKLY BOND BUYER

SAND BLAST

the easy RUEMELIN way!

A practical Sand Blast Generator for all types of outdoor cleaning work. Removes rust scale, paint. Cleans bridges, removes laitence from cement. Cleans ready-mix trucks and highway equipment prior to re-painting. Equipped with remote control with deadman valve for stop and start *at the nozzle!* Wet type nozzles also available if desired. Portable units can be equipped with hi-speed mountings for highway trailing.

Write for descriptive bulletin.

RUEMELIN MFG. CO.
3902 N. PALMER STREET MILWAUKEE 12, WIS., U. S. A.
MANUFACTURERS AND ENGINEERS — SAND BLAST AND DUST COLLECTING EQUIPMENT — WELDING FUME COLLECTORS

A8-9403-1/9A

don't get caught
order your snow plows NOW!

select from our complete line

THE
GLEDHILL
ROAD MACHINERY CO. *Galion, Ohio*

HOW TO BUY THE BEST CHIPPER FOR YOUR NEEDS

❶ **Ask for a Free Demonstration.** Your dealer will gladly demonstrate the new 1961 Asplundh . . . will even run it side-by-side with any other chipper to let you compare machines and results.

❷ **Look for the features that give you these benefits.**

Chipping Speed. By actual test Asplundh is the fastest chipper made—which your dealer will gladly prove.

Low maintenance cost. The Asplundh has fewer moving parts. This means lower maintenance, less down time.

Safety to workers and passers-by. Asplundh blades are tapered and wedged—cannot fly out.

Ease of operation. Unskilled labor can operate the Asplundh with ease—change blades quickly.

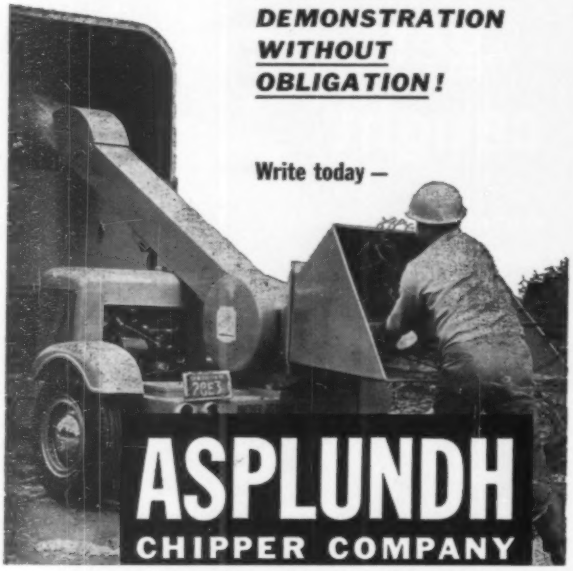
Highway safety. Asplundh's underslung engine and axle place the center of gravity low for safe, true highway tracking.

Big capacity. Asplundh chips all you can feed it—limbs up to 6" diameter—hour after hour, day after day.

❸ See for yourself why Asplundh outsells all other makes. Write for new brochure of testimonials from satisfied users.

ASK FOR A DEMONSTRATION WITHOUT OBLIGATION!

Write today —



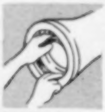
ASPLUNDH
CHIPPER COMPANY
Hamilton St., Chalfont, Pa.

Proven in service by the world's largest tree company

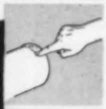
—for the BEST CONNECTION you'll ever make... specify

APCO Underwriters Approved
ALTITE®
JOINTS
Protected by Patent

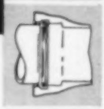
The **ALTITE JOINT**, even under most extreme conditions, is so simple to install you could hardly go wrong if you tried!



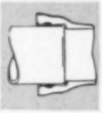
Insert rubber gasket in bell end of pipe. You can't put it in wrong.



Lubricate lightly to reduce friction.



Insert plain beveled end — there are no grooves, ridges, or tips on gasket to interfere.



Small amount of pressure forces end to bottom of socket, completing the tight joint.

ALABAMA
PIPE COMPANY
A Division of Woodward Iron Company

Phone AD 6-7601, ANNISTON, ALABAMA

We invite your inquiry at any sales office:

CHICAGO: 122 S. Michigan Avenue
NEW YORK: 350 Fifth Avenue
KANSAS CITY: Suite 950, 1006 Grand Ave.
DETROIT: 18505 W. Eight Mile Road
SOUTH GATE, Calif: 5335 Southern Ave.

GRIND - CUT - SCARIFY

with EDCO Concrete & Asphalt Equipment

Concrete Grinders
Model 2EC

Gasoline or Electric Powered

Grind rough slabs — easily — quickly — light weight — no torque — wet or dry grinding

Concrete & Asphalt Plane
Model CP-5

Completely adjustable 5" wide, high speed cutters will remove up to ½" of material, quick change cutters available in all combinations for all planing jobs.

For sales or rentals of these and other EDCO products (concrete saw, pumps, generators, etc.) see your dealer or write:

EQUIPMENT DEVELOPMENT CO.
2700 Garfield Ave. Silver Spring, Md.
JU 5-8795

Removes Traffic Lines, Smooths, Scarifies Street Surface

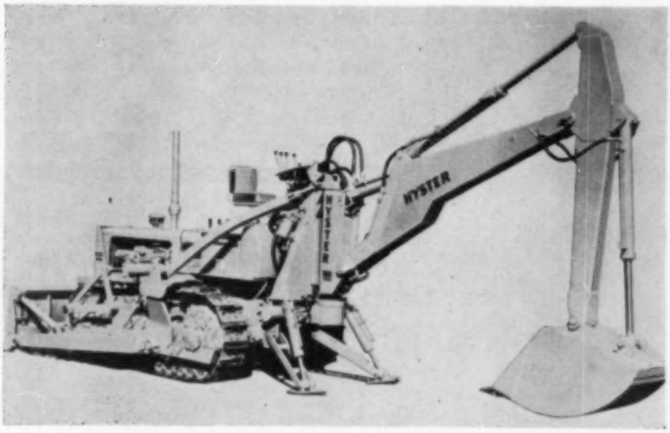
Concut Sales, Inc., El Monte, Calif., manufacturer of the Model SC-360 Surface Cutter, reports that tests show this unit is able to remove unwanted traffic lines at speeds up to 30 feet per minute, from either asphalt or concrete surfaces.

When used for scarifying concrete surfaces prior to overlaying, the SC-360 does a good "clean-up" job, imparting a corduroy-like surface texture to the concrete and presenting a superior bonding surface.

The SC-360 can also be used to remove "washboard" surfaces in asphalt. Existing compaction and aggregate aren't distributed and, according to Concut engineers, the Surface Cutter method eliminates or materially reduces washboard effect in asphalt.

When it is desirable to recess traffic line paint, the SC-360 again proves its usefulness by being able to cut a shallow trench, 5 inches by 1/4 inch, at a speed of 9 feet per minute.

For additional information on this versatile machine, write CONCUT SALES, INC., 1845 BELCROFT AVE., EL MONTE, CALIF.



Better Hydraulic Backhoe

This Hyster Unit, with 8,000-pound breakout force, is designed to mount on Caterpillar D4 (60″ gauge) tractors, and Cat HT-4, and 955 Traxcavators. Improvements are calculated to upgrade performance and reduce excavating costs.

Hoe front can swing at full rated speed of 5½ rpm through 210° arc at the same time the bucket is being raised or lowered. Design allows digging to 12½-foot depth and straight backwall digging to a 6-foot depth. Three buckets are available, in widths of 16 inches (5.3 cubic feet), 22 inches (7.8 cubic feet), and 30 inches (13.5 cubic feet). For additional information write HYSTER CO., TRACTOR EQUIPMENT DIV., P. O. Box 328, PEORIA, ILL.

Trenches for Street Lighting Cable

This new machine has been developed primarily for use in the installation of underground street lighting cables where it is desirable to trench the cable close to the curb.

The jack on the trencher wheel may be installed on either side of the trench, so that spoil can be deposited on either the street side or parking side of the trench. Installation of the jack is such that one trencher wheel may be lowered as much as one foot, allowing the machine to be maintained on a vertical plane while the wheels are driving on two different levels.

The 9-hp Model M4-L digs trench from 3 to 8 inches wide to depths of 4 feet; 12-hp Model M4-22L digs trench 3 to 12 inches wide to 5 feet in depth. Both models are adaptable to work where trench is being dug on terraces or side hill grades with a slope of 4 to 1 or less. Under these conditions they produce a vertical trench. For additional information on the Jack-Leg Ditch Witch, write WITCH MARKETING CO., Box 249, PERRY, OKLA.

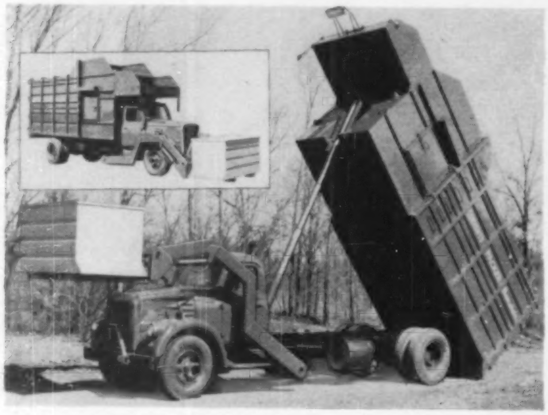
Introduces New Easy Loading Refuse Packer

The quiet-operating, steel-bodied Converto Packer is being offered by Converto Mfg. Co., Cambridge City, Ind., for use in both route pickup and container-collection operations, and is available in three basic sizes —20, 30, and 40-yard. Its front loader system is capable of carrying its own container for door-to-door collections, or without any adjustments, picking up and dumping standard containers. The loader is rated at 3000 pounds capacity.

The Packer carries its pickup container at ground level for easy filling by route men (inset), then swings it up and into an opening in the body for emptying and safe transport. Compaction is handled by a steel blade, propelled in a front-to-back direction by two hydraulic cylinders. Operation of the front loader, front forks and compactor blades, as well as final dumping of the body to release the load, is done by hydraulic power. Expelling of contents is accomplished through barn-type doors at the rear of the Converto Packer.

Duplicate controls are located both inside and outside the truck cab, allowing the driver to operate front-loading and container-emptying cycles from the most convenient place. Using a right hand drive, with the driver also working on pickup, two men can handle a collection route in less time than three or four men ordinarily require with conventional equipment, reports the manufacturer. In servicing standard container routes, one man is all that is required to do the job.

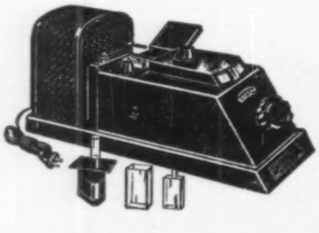
The Packer body can be mounted on any truck of proper capacity, conventional or cab-over designs. For complete information, write CONVERTO MFG. CO., CAMBRIDGE CITY, IND., attention CONTAINER PRODUCTS SALES DIVISION.



The Converto Packer carries a container at ground level for easy filling (see inset) and dumps it into the Packer. The front forks also pick up and empty containers.

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street, New York, N. Y.

THE J. M. CLEMINSHAW CO.

— APPRAISERS —
Founded 1923
1601 Brookpark Road Cleveland 9, Ohio

SPECIALIZING IN THE REVALUATION OF MUNICIPALITIES AND RURAL PROPERTY FOR LOCAL TAX EQUALIZATION PURPOSES

Brochure & Client List Sent on Request

— BRANCH OFFICES —
Plainville, Conn., 11 Williams Street
Milwaukee, Wis., 2014 Sunset Court
Union, New Jersey, 2165 Morris Avenue
West Des Moines, Iowa, 712 28th Street

Rugged Speed Timing Device

RADAR TIMER

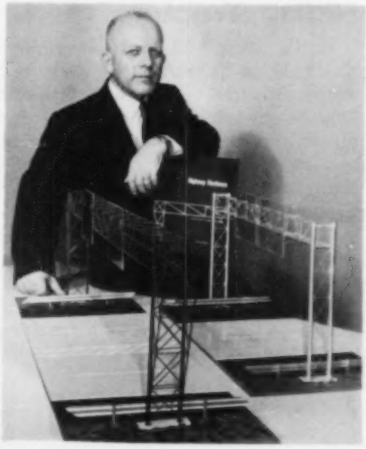
The Muni-Quip Corp. announces a new Radar Timer, Model 304A, which times cars from 600 feet to its check point and trucks and buses up to 1,500 feet away.

Amplifier-power supply case is 10¼ inches wide, 5⅝ inches high, 10⅛ inches deep. Total weight is 12 pounds with vibrator supply, 8½ with the transistor power supply. "Rabbit Ears" antenna can be used on spotlight arm, window or door bracket, seat bracket or floor mount. Mounting versatility, either inside or outside the car, makes possible year-round operation, regardless of weather.

For additional information, write Muni-Quip Corp., 989 W. King St., Decatur, Ill.

New Overhead Sign Supports

The first phase of United States Steel's Highway Hardware design and engineering program focuses on overhead sign supports, reflecting the growing need for this type of structure in today's multi-lane interstate and defense highway systems. Robert S. Holmes, manager of highway construction marketing for U. S. Steel, poses with models of a rigid frame used for intermediate span ranges (left) and a simply supported box truss of uniform section. Clear plastic squares indicate locations for signs.



Grass-Cutting Planning Service

Institutional users of grass-cutting equipment can now avail themselves of a new service that (1) provides detailed custom surveys of the grass-cutting problems of golf courses, park and highway departments, schools, cemeteries, and other institutions; (2) gives an evaluation of equipment requirements; (3) offers written proposals for handling both problems.

Various types of areas and grasses to be cut, total acreage involved, length of mowing season, present mowing equipment in use, number of operators employed and their average hours and wages are recorded. Credits and debits of the system currently in use are drawn, then a proposal is drafted to show recommendations that would lead to savings in time and cost.

The Planning Service will be offered to institutional customers by Toro distributor sales field representatives. According to James M. Kaufman of Toro, the purpose of this service "is to furnish every institutional customer with an analysis of his grass-cutting problems and present him with a new plan that will better serve his needs or save him money."

For additional information, write Toro Manufacturing Corp., Minneapolis, Minn.

SWENSON
the Summer-Winter Spreader...

U. S. Army Photograph

for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.

SWENSON SPREADER
LINDENWOOD, ILLINOIS

NCG® wherever emergency strikes...

Handy* Resuscitators automatically breathe when the breath of life is gone.

The Handy Resuscitator does *three* important things:

1. It automatically inhales and exhales, adjusting automatically the depth of respiration to the patient's lung capacity, for an adult, child or even *infant.*
2. It can be quickly switched to "Inhalation" to supply oxygen to be absorbed by the spontaneous respiration of the patient.
3. It provides sufficient suction as an Aspirator to remove obstructing material from the throat, such as water, mucus, etc.

"BE PREPARED"
for drownings,
carbon monoxide
poisonings, heart attacks,
electric shock,
strangulation, asthma,
asphyxia of
the new-born.

Get complete information today.
Phone or write now.

NATIONAL CYLINDER GAS
DIVISION OF CHEMETRON CORPORATION
840 North Michigan Avenue, Dept. M-10G
Chicago 11, Illinois
CHEMETRON

© 1960, CHEMETRON CORPORATION

*Trademark

Sewer Service Film

A new motion picture offers valuable basic facts concerning community sewer facilities. It is called "Pipelines to Health," and will be of interest to community planners, municipal authorities, consulting engineers, contractors and taxpayers.

The film details the advantages of asbestos-cement sewer pipe during the planning, installation, and operation and maintenance of sewer collection systems. Topics covered include the need for adequate planning, characteristics of sewer pipe that contribute to economy of installation, operation and maintenance. Also stressed are the economies achieved in the expansion of sewage collecting and treatment facilities. Viewers are also given a glimpse of a 25-year old Transite sewer line in active use.

To arrange for a showing of the 23-minute, 16mm color film, write JOHNS-MANVILLE, PIPE DIVISION, 22 E. 40TH ST., NEW YORK 16, N. Y.

Mower for Small Riding Tractors

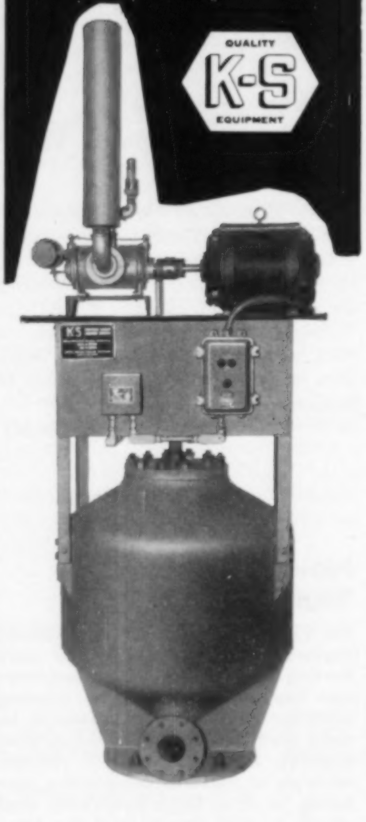
Mott's new 32-inch Hammer-Knife is a combination reel and rotary mower, equipped with 88 lightweight free-swinging blades that fold back from obstructions and return to cutting position when clear, minimizing danger from flying sticks, stones and debris. Knives require no setting and accept repeated sharpening.

The three models can be used for smooth lawns, tall man-size weeds or mulch leaves. There is a tractor-powered front wheel model, self-powered front model, and self-powered trailer unit. The trailer-type unit can be ganged for wider cutting swath, and is powered by a 5½-hp, 4-cycle engine. It can be used with any small riding tractor.

Mott's new tractor-type front powered mower.

For additional information, write to MOTT CORP., 500 SHAWMUT AVE., P. O. BOX 278, LA GRANGE, ILL.

PNEUMATIC SEWAGE EJECTORS



- Komline-Sanderson sewage ejector systems — from 30 to 600 GPM capacities, simplex or duplex arrangements.
- Available with K-S transistorized, electronic liquid level or mechanical (float) controls.
- Furnished with air compressors or for operation on plant air supplies.
- Backed by the Komline-Sanderson service policy. Write for Bulletin No. KSM-2

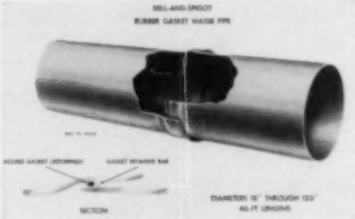
KOMLINE-SANDERSON
ENGINEERING CORPORATION
PEAPACK, NEW JERSEY
BRAMPTON, ONTARIO, CANADA

Reduces Cost Of Laying Steel Water Pipe

Bell-and-spigot rubber gasketed joints for use with large-diameter steel water mains have been widely used in the Far West. Bethlehem Steel Co. recently introduced them in the East and Midwest.

According to Bethlehem, this "O-ring" joint makes possible the completion of a joint in less than five minutes, at major savings in cost. Hydrostatic tests indicate that the new rubber-gasketed joint has excellent leak-free characteristics.

The new joint resembles the gasketed joints commonly used with concrete pipe. The female end is belled; the male end, or spigot, is flared slightly. A steel retainer ring, welded a few inches back from the spigot end, acts as a gasket stop. In joining, the rubber gasket is slipped over the spigot end, snugly against the retainer ring. The inside of the bell is lubricated with vegetable oil soap solution. With one pipe section motionless, the other is pushed home to refusal.



Bethlehem expects to furnish O-ring pipe with shop-applied coal-tar enamel exterior coating and interior lining. Deflections possible with the new joint vary with the pipe diameter and wall thickness, but in general are said to be equal to those obtained with all commonly used joints.

For additional information, write Bethlehem Steel Co., Bethlehem, Pa.

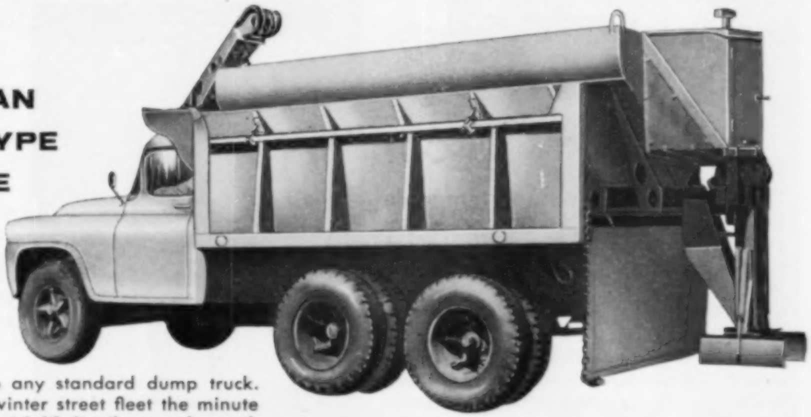
Police Photography

A series of seven slide presentations for use by law enforcement agencies is intended to provide training and information on the use of photography in police work.

Included in the presentations are: "General Evidence Photography," "Color Photography in Police Science," "The Use of X-Rays in Criminal Investigation," "The Importance of Perspective in Police Photography," "Arson Photography," "Principles of Flash Photography," and "Identification Through Radiography."

Much of the material is based on the world-famous law enforcement seminars of Harris Tuttle, consultant on law enforcement photography at Eastman Kodak Co., and many of the slides are taken from actual case histories.

For additional information, write Audio-Visual Service, Eastman Kodak Co., Rochester 4, N. Y.



Converts Truck for Ice-Control Work in 15 minutes

NEW! BAUGHMAN AUGER TYPE A1-SC MOUNTABLE SPREADER

Special body that fits readily into any standard dump truck. Turn your trucks into an effective winter street fleet the minute bad weather strikes. The Baughman A1-SC distributes salt, sand, cinders . . . spreads from one-lane to four-lane widths. Just set the control in the truck cab. Positive and even flow of material from body to distributor by heavy duty auger. An 18 HP engine drives the auger and distributor. The Baughman A1-SC gives you a standby fleet, ready for winter.

A Few Choice Dealerships Available.

BAUGHMAN TRANSPORTS-SPREADERS-CONVEYORS

BAUGHMAN MANUFACTURING CO., INC.

307 SHIPMAN ROAD, JERSEYVILLE, ILLINOIS

6135

Write for Bulletin A-464

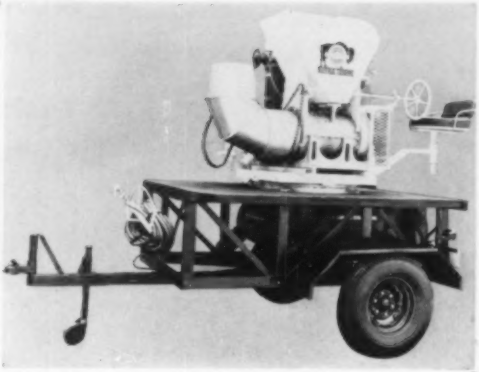
Baughman Manufacturing Co., Inc.
Jerseyville, Illinois

Name..........

Address..........

City.......... State..........

THE
ALL NEW
**Buffalo
Turbine
FST-1**



BRINGING YOU
THESE FINE FEATURES:

- 100 Gallon Stainless Steel Tank.
- High Pressure Piston Type Pump.
- Full 360° Turntable Rotation of Unit.
- Handles Dust and Granulas.

SPRAYER
TURBULENT AIR
DUSTER
BUFFALO TURBINE

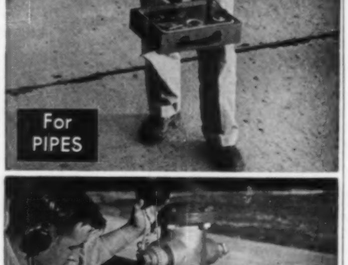
BUFFALO TURBINE
Agricultural Equipment Co., Inc.
69 Industrial Street
Gowanda, New York

Write For Free Descriptive Literature

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector
"Dualtronic"
Model LC-5T

For
PIPES



For
LEAKS

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.

The GOLDAK Company, Inc.
Leading Electronic Manufacturers
Since 1933

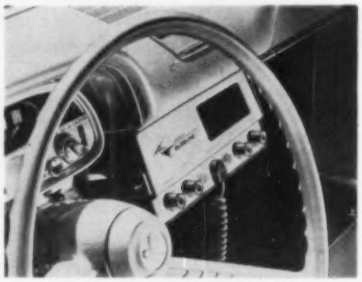
1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

New Mobile Radio Set

A 15-watt, low-cost, VHF FM 2-way radio set which weighs only 8⅝ pounds is the latest addition to Aerotron's "Slimline" series of communication equipment.

The new set is less than 5 inches high, and fits easily under the dash of any car or truck. Operating controls are conveniently located. There is optional provision for a maximum of three transmit and receive channels and provision for plug-in addition of Unicall at any time in the field. Unicall is Aerotron's selective call system which permits sharing of crowded frequencies without interference.



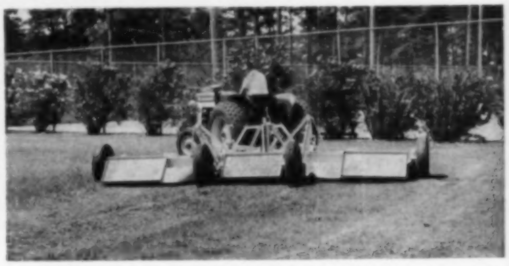
There are numerous refinements in the new Slimline, and particular attention has been placed on the reduction of power consumption to both receive and transmit conditions. Battery drains on 12 volts have been reduced to less than 3 amps for the receiver and less than 9 amps for full 15-watts output from transmitter.

Initially available for only 12-volt operation, the new Slimline may be interchanged from vehicle to vehicle without regard to battery polarity since the proper connections are made external to the set in the power cable socket. For additional information, write Aeronautical Electronics, Inc., P. O. Box 6527, Raleigh, N. C.

Automatic Starter for Pavement Marker

Wald Industries, Inc., Huntingdon, Pa., has introduced an Automatic Pully that allows the operator of pavement marking machines to start the striping machine engine independently of the compressor. The loadless starter also makes it possible to stop the striping machine's compressor, while still allowing the engine to idle. The new accessory can be added simply and inexpensively to Wald models Junior 8, 8T, 9, 12, 16 and 16A.

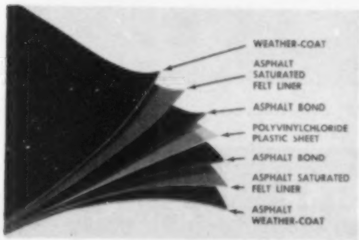
Gang Mower for Large Areas



A 15-foot flexible Terrain King exhibits its versatility in mowing park grounds in Memorial Park, Houston, Tex. The Terrain King is manufactured by the SMC Mowal Division of the Engler Mfg. Co., Houston.

Mat-Type Plastic Liner Developed for Water, Sewage Containment

W. R. Meadows, Inc., has developed an asphalt-plastic liner that combines the efficiency and durability of asphalts with the strength and elasticity of polyvinylchloride plastic. It is called "Meadowmat," and is ideal for lining water reservoirs, chemical treatment ponds, sewage lagoons, for the general control of liquids and vapor, and for soil isolation of structures.


WEATHER-COAT
ASPHALT SATURATED FELT LINER
ASPHALT BOND
POLYVINYLCHLORIDE PLASTIC SHEET
ASPHALT BOND
ASPHALT SATURATED FELT LINER
ASPHALT WEATHER-COAT

This practical lining material is manufactured in sheet form and consist of a seamless polyvinylchloride plastic sheet bonded by a special process to asphalt "armor-coatings" and highly saturated felt coverings. The exterior surfaces are coated with an additional asphalt weather coat for maximum weather resistance. "Meadowmat" lines are nominally ⅛-inch thick and are now available in sheets 4 feet wide, lengths up to 15 feet, and weigh ¾ pound per square foot. They are easy to place without worry of puncture or tears. They permit asphalt-to-asphalt joints that can be conveniently made with either hot-mop asphalts or cold-applied mastic materials, both of which are easily used in field applications.

For complete information on "Meadowmat" asphalt-plastic liners, write to W. R. Meadows, Inc., 26 Kimball St., Elgin, Ill.

New 8-inch Submersible Dewatering Pump

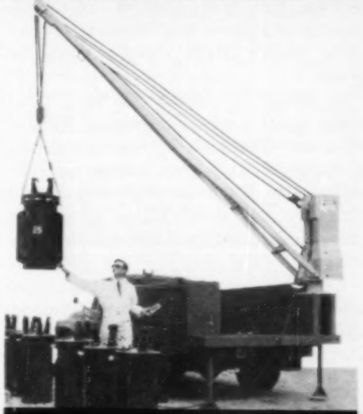
The Gorman-Rupp Co., 305 Bowman St., Mansfield, Ohio, has expanded its line to include an 8-inch submersible dewatering pump with capacity ranges from 1000 gpm at 148-foot head to 2700 gpm at 40-foot head.

Model S8A1 is fully field tested and includes the same basic design characteristics that have proven successful in the company's 3-inch submersibles. It has an oil-filled motor housing for increased cooling and dual seals that run in oil. Aluminum construction reduces weight to 775 pounds; height is 31 inches; diameter 28 inches. Strainer area is 480 square inches with 1-inch square openings.

The 8-inch S8A1 is available with 65-hp motor, 1750 rpm, 3-phase, 60-cycle, 220 or 440 volt current. Fifty feet of cable is provided with each unit. Additional information can be obtained by writing directly to Gorman-Rupp.

Economical — Dependable
Safe

ONE MAN
MATERIAL
HANDLING
New-
Model ROC-24-LC



OFFERING . . .
- 3,500 lb. capacity
- 9 ft. boom standard longer boom lengths available
- Push button portable remote controls
- 360 degrees power rotation
- Light weight, compact
- Vehicle mounted

VEHICLE BATTERY OPERATED

POWER HOISTS ✦ POWER BOOMS ✦ POWER ROTATES ✦

Write today for illustrated literature, specifications and price lists on all models of AUTO CRANE.

AUTO CRANE Company
1214 S. NORWOOD • TULSA 12, OKLA.
Never a strain-with Auto Crane

Kills Flying and Crawling Insects

A water-emulsifiable insecticide developed by National Chemsearch Corp. is said to instantly destroy insects resistant to DDT and other chlorinated insecticides. It is called Eldrin, and combines several insecticides, one synergizing the other into an efficient powerful insecticidal compound with long-lasting residual.

Highly concentrated Eldrin may be diluted with either water or oil for optimum economy. When diluted with water, it proves especially effective for the control of grub worms, chiggers, and other lawn insects; won't harm trees, shrubs or grass.

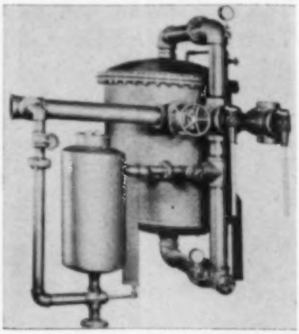
In order to obtain the best possible results when spraying Eldrin, National Chemsearch has developed a compact, 60-pound power sprayer called the Dart. It dispenses liquid fertilizer and weed killer as well as insecticides, and has adjustable controls for mist, fog, or for distance.

For detailed, descriptive literature on both products, write to NATIONAL CHEMSEARCH CORP., 2417 COMMERCE, DALLAS, TEXAS.

Death dealing spray is delivered by this Dart power sprayer.

Automatic Swimming Pool Filtration

The Refin-O-Matic automatic diatomite filter automatically backwashes when the filter is exhausted; measures the correct amount of diatomite; returns itself to service, then automatically puts in the correct body feed. According to the manufacturer, the operator is required only to keep the diatomite hopper full of filtering aid. Refin-O-Matic is available in sizes ranging from 90 to 810 gpm. For details, write REFINITE POOL EQUIPMENT CO., P. O. Box 410, VAN NUYS, CALIF.



Your Problem:
LEAVES !
Your Answer:
The
GOOD
ROADS
LEAF
COLLECTOR
Two-man operation. Sweeps to 8'. Holds 14 cu. yds. Write for full information.

Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P.O.Box 307 Amherst 3-2711

Purchasing News

New Versatile Asphalt Plant

Model L-201 is said to have big plant features at low cost—parallel flow dryer, hot elevator, 5-ton hot storage bin, air-operated gates, and batching tower with 1000-pound mixer. The plant is rated at 25-30 tons per hour hot mix. Aggregate mixes can be quickly and easily changed, making it possible to run a few loads of base material and switch to top material with a minimum loss of time.

Accessories include asphalt meter, dust collector, aggregate and asphalt scales and asphalt heating systems. For further information, write WHITE MANUFACTURING CO., INC., ELKHART, IND.

Asphalt plant with big features is low in cost.

Files Blueprints, Drawings

STIKFILE Model OC-2224 is a new open-type steel cabinet for filing engineering drawings, blueprints and maps. It accommodates prints up to 24 inches by 26 inches and comes complete with 22 two-foot long binders. A label strip extends across the front section of the cabinet directly across the traverse rack, assuring index ease. The cabinet is 36 inches wide, 42 inches high and 26 inches deep. Its binders hold from 1 to 75 prints each; total capacity, 1650 prints.

Additional information can be obtained from DANCER STIKFILE COMPANY, P. O. Box 10221, HOUSTON 18, TEXAS.

Clean Water Meters now in FIVE Minutes —

with VAPOR BLAST Liquid Honing*

. . . no acids, solvents, scrapers, wire brushes

Meters and parts at Milwaukee Water Works before and after Liquid Honing.

Modernize *your* meter cleaning — with Vapor Blast LIQUID HONING! Removes dirt, discoloration, scale, paint from corners, crevices, internal parts, chambers, thoroughly and effectively, with *no possibility* of scratching, scoring, or change in precision tolerances. Completely cleans a meter and all parts in less than FIVE minutes . . . Delivers cleaner, brighter water meters that look like new — to build customer satisfaction and confidence in your water meter department *economical* replacement program.

VB Liquid Honing is proving itself in Milwaukee, Cincinnati, and in towns in New Jersey, Georgia, Florida. Get the whole time-saving, money-saving story on VB LIQUID HONING in meter cleaning — or send a meter for Free laboratory demonstration cleaning.

*Vapor Blast and Liquid Honing are Trademarks

Representatives—Good Territories Available.

VAPOR V·B BLAST MILWAUKEE WISCONSIN

VAPOR BLAST MFG. CO.
3037 W. Atkinson Ave.,
Milwaukee 9, Wisconsin

800 rooms of **Comfortable Living**

DETROIT LELAND
BAGLEY
CASS
MICHIGAN AVE
SECOND
21 ST

in the DETROIT LELAND HOTEL

- All with bath, radio and TV
- Grenadier Dining Room and Lounge, Coffee Shop
- Fine Convention Facilities
- Ample Parking

Lanson M. Boyer, Gen. Mgr.

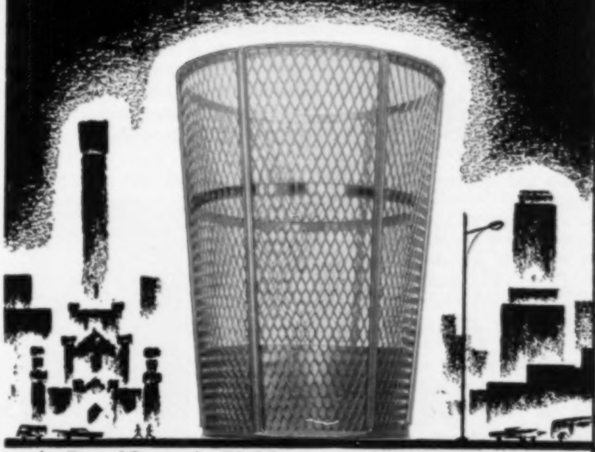
AAA

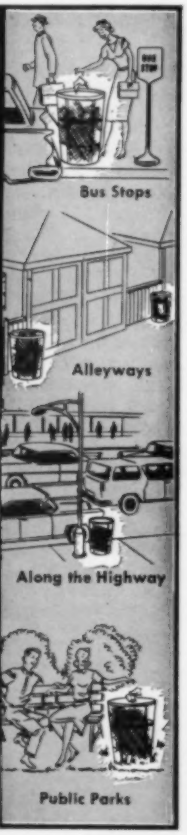
IN DOWNTOWN DETROIT
Cass Ave. at Bagley
Phone . . . WOodward 2-2300

DEMCOR E-X-P-A-N-D-E-D METAL

LITTER BASKETS

Help keep your city CLEAN





★ Durable ★ Rigid ★ Weather Proof
★ Low-cost ★ Galvanized ★ Built to last

Write for complete description and prices

DESIGNERS METAL DIVISION
of Southern Electric, Inc.
8701 S. Greenwood Ave. • Chicago 19, Ill.

ABOUT PEOPLE

Robert Wormser

Game-Time, Inc., Litchfield, Mich. manufacturer of playground, park and sports equipment and wholly-owned subsidiary of Simpson Mfg. Co., recently appointed Robert S. Wormser general manager and director of sales. Mr. Wormser is a nationally recognized designer of playground equipment.

Alfred E. Busch was elected to succeed Carl W. Keuffel, who is retiring as president of **Keuffel & Esser Co.,** Hoboken, N. J., the nation's oldest and largest producer of drafting, reproduction, and surveying equipment and materials; slide rules, measuring tapes, and optical and meteorological systems and components.

John Miller

Madison L. Crawford, manager, advertising and sales promotion for **The Frank G. Hough Co.,** Libertyville, Ill., has announced the appointment of John C. Miller as assistant to the advertising manager. R. E. Connolly will continue in the post of assistant advertising manager.

William Perkins

According to Charles W. Krause, general sales manager of the Liquid Meter Division, **Neptune Meter Co.,** New York 20, N. Y., William L. Perkins has been appointed a sales representative for the division. He will work out of the company's Louisville District office and will serve water meter customers in Ohio and the northeastern area of Kentucky.

A recent announcement from A. Merrill Smith, field sales manager for **Austin-Western,** Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Aurora, Ill., made known the appointment of Ronald C. DesJarden a district sales manager for the territory that includes Ohio, Indiana, Michigan and Kentucky.

Joseph T. Donahue has been placed in charge of the new **United States Pipe and Foundry Company** sales office, located in the Snyder Square Bldg., 4498 Main St., Buffalo 26, N. Y.

E. E. Cone has been named to head the Wemco Pump Department, according to word from P. H. Mulcahy, general manager of **Wemco,** a division of Western Machinery Co., San Francisco 7, Calif.

Appointment of D. J. Sullivan to the post of product sales manager, Rexon Mount Division, **Hamilton Kent Manufacturing Co.,** Kent, Ohio, has been announced by T. S. Rowe, president. Rexon Mounts are used in industry to isolate vibration of operating equipment and to deaden sound.

Mark Owen

Nichols Engineering & Research Corp., New York, N. Y., has consolidated its Filtration, Refuse Incinerator and Sewage Sludge Division into a Public Works Equipment Division and has named Mark B. Owen, a vice president of the company, to head it. The move is a step in Nichols program to increase sales service and provide for future expansion.

Clarence Keller

The Board of Directors of the Holophane Co., Inc., New York 17, N. Y., manufacturer of engineered lighting equipment, has elected Clarence C. Keller president, effective July 1. Charles Franck, president of Holophane since 1929, continues as chief executive and chairman of the Board.

The appointment of Kenneth R. Geist as general manager of the newly formed Special Products Department, **Allis-Chalmers Manufacturing Co.,** Milwaukee, Wis., has been announced by W. G. Scholl, executive vice president.

F. C. Schulze

F. C. Schulze, general sales manager of **Waukesha Motor Co.,** Waukesha, Wis., builder of Climax and Roiline engines and power units, has been advanced to the post of vice president of sales. The announcement was made by C. E. Nelson, president, following a recent meeting of the company's Board of Directors. In his new position, Mr. Schulze will direct and coordinate sales efforts of Waukesha Motor throughout the United States and in foreign markets.

D. A. Milligan

J. P. Cody

To strengthen the marketing activities of the **J. I. Case Co.,** Racine, Wis., several appointments have been made. A. Earl Lee, vice president-marketing, has announced that D. A. Milligan was named to the new post of general manager, marketing and product development, and that J. P. Cody was appointed general sales manager of the Industrial Division.

Albert Crockett

Albert G. Crockett, general sales manager of **Mack Trucks, Inc.,** Plainfield, N. J., has been elected a vice president of the company. He will continue to direct sales and service operations of Mack factory branches and distributor outlets and will also administer advertising and sales promotion programs.

Robert Bjorklund

Robert H. Bjorklund, formerly executive vice president of **Lyle Signs, Inc.,** Minneapolis, Minn., has been elected president of the company. Other new officers are Peter F. Pierce, vice president, D. M. Pierce, secretary-treasurer, and Howard Wallin, assistant secretary. The company manufactures deep-embossed baked enamel street name signs, brackets and fittings, and city and highway traffic signs.

New executive vice president of **Willys Motors, Inc.,** is Cruse W. Moss, according to an announcement by Stephen A. Girard, president. Mr. Moss joined the Kaiser organization at Willow Run, Mich., in 1947, and became assistant general sales manager of Willys when the company was purchased by the Kaiser organization in 1953. He later became vice president in charge of sales.

(Continued on page 194)

Best Bid purchase of No. 14 Motor Grader pays off in round-the-year value

When you put a 150 HP Cat No. 14 Motor Grader to work, you know you have a machine with the size and power to get a job done fast, allowing you to use it for other roadbuilding assignments.

Plattsburg, New York, needed such a productive machine in winter for removing snow from its 75 miles of township and village roads and, during the warm months, for repair, maintenance and building other roads. Township authorities decided that a machine the size of the No. 14 answered the year-round need for equipment with much higher productive ability than their older, smaller horsepower Cat Grader which had given nine years of superb service.

Purchased on the "Best Bid" basis, the No. 14 was $5600 above the low bid. But the fact the trade-in value of the older Cat Grader was high and considering the quality manufacture, low operating costs, maintenance and depreciation of the No. 14, Plattsburg officials knew that the Caterpillar machine would cost them less in the long run.

Township Supervisor Bernard Amell believes in Best Bid buying of heavy equipment. As he says, "Public funds must have protection but price-tag protection breaks down and becomes self-defeating when applied to modern construction equipment. The exclusive consideration of initial cost of a complicated piece of machinery that must be used, serviced, maintained and repaired for several years results in miscarriage of legal safeguards. The accepted machine cost figure must include not only initial price, but also more important items such as fuel and oil consumption, ease in servicing, maintenance costs."

If you don't need a machine of the size and capacity of the No. 14, your Caterpillar Dealer can show three other motor graders: the 85 HP No. 112E, the 100 HP No. 112F, and the 115 HP No. 12E. Ask him for other cost records that prove Cat Graders give you lowest total cost.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

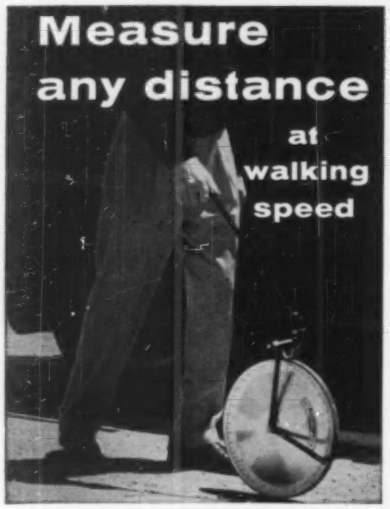
BUDGET STRETCHING FEATURES OF THE NO. 14

- Weight and stability: a hefty 28,520 lb.; 14.00-24 tubeless tires give superior traction.
- Easier service: exclusive Caterpillar Oil Clutch gives up to 2000 hours' service without adjustment. Dry-type air cleaner removes 99.8% of dirt from intake air.
- Versatility: with attachments like snow plow and snow wing, scarifier, ripper, or bulldozer blade (shown above).

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

TO GET MORE
JOBS DONE FASTER—
THE NO. 14



records 100,000 ft.
automatically!

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc.,
1741 14th St.,
Santa Monica 2,
California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Rolatape
Measuring Wheels

About People

Hersey-Sparling Meter Co., Dedham, Mass., has added John B. Smith to its sales force. Mr. Smith will be responsible for the sale of Hersey water meters in most of Pennsylvania and in the "panhandle" area of West Virginia. Mr. Smith is a graduate of Colgate University.

John Smith

Centriline Corp., specialist in rehabilitation and lining of pipelines and subsidiary of Raymond International Inc., New York 6, N. Y., has opened a new West Coast office at 816 W. Fifth St., Los Angeles, Calif. and has named James E. Wolfe district manager of the seven-state area office.

James Wolfe

Norman R. Gahnz, vice president for sales of **Wausau Iron Works,** Wausau, Wis., has been named vice president and general manager. He succeeds R. J. Heinzen, president of the company, as general manager. Wausau Iron Works, a leader in the snow plow industry, recently acquired the Thrun Manufacturing Co. of Pine City, Minn., to diversify and expand Wausau equipment and markets.

Norman Gahnz

The Pacific Flush Tank Co., Chicago, Ill., has named several new sales and service representatives. DeLaval Turbine Pacific Co. will represent P.F.T. in northern California, with Edward M. Eberle, P.F.T. representative at Millbrae, and Kenneth L. Petry, working out of the Sacramento office. James MacNichols, Earl Ivins and John Sidle of Engineers Sales-Service Co., Inc., Los Angeles, will handle sales and service in southern California. H. D. Fowler Co., Seattle, Wash., will be P.F.T.'s new sales and service office in the Northwest region, with Max X. Campbell and Donald R. Bentley representatives. Greg McMillan and Harry King will represent P.F.T. out of the British Columbia office serving the Vancouver and Victoria areas.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. So., New York 16, N. Y.

EXECUTIVE SECRETARY WANTED

The City of Staunton, Va. situated in the heart of the Shenandoah Valley, population 23,000, needs the services of an Executive Secretary for a newly organized Redevelopment and Housing Authority. Urban Renewal experience necessary. Salary up to $8,000.00 based on experience. Write to: M. J. Reid, Chairman, City Hall, Staunton, Virginia.

BOROUGH MANAGER

$6,000-$8,000, newly created position. Budget $150,000. Rapidly growing college and residential community. Population 3800. Position includes operation of Water and Sewer Systems. Civil Engineering experience required.

Walter L. Hanf, Secretary,
Millersville,
Lancaster County, Pa.

FOR SALE

WILCO Machine Works "Teepee" model No. 525, Industrial and Municipal Refuse Burner, complete and ready for installation; overall height 57′ 3″; base diameter 52′ 6″; base area 2165 sq. ft. Never used. Write:

T. J. Forde, Purchasing Agent
City of Newton
Newton 59, Massachusetts

FIRE ALARM EQUIPMENT FOR SALE

(Located at Fire Alarm Shop—127 Glenwood Avenue, Minneapolis, Minnesota).

15 Gamewell Fire Alarm Boxes (3 fold type)

6 Superior Fire Alarm Boxes (3 fold type)

5 Punch Registers ½″ Paper Tape (Gamewell)

5 Punch Registers 1″ Paper Tape (Gamewell)

(All above are used—Condition Good)

10,000′ of 7 Pair #16 Lead covered, Latex, rubber insulated Fire Alarm Cable on 1,000′ reels (Condition new)

2,000′ of 7 Pair #16 Latex insulated Parkway Armored cable on 1,000′ reels (condition new.). To be sold for cash, as is, and where is. Submit prices to City Purchasing Department, 301 City Hall, Minneapolis 15, Minnesota, on or before September 15, 1961.

The American City
Professional Service Directory

ALBRIGHT & FRIEL INC.
Consulting Engineers
Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates.
Three Penn Center Plaza
Philadelphia 2, Pa.

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works
Sewage Disposal
Water Purification
Drainage
Flood Relief
Appraisals
Sewerage
Power Generation
20 North Wacker Drive, Chicago 6, Ill.

AURNHAMMER, JESKE & AURNHAMMER
Consulting Engineers
Water Supply & Treatment
Sewerage & Sewage Disposal
Industrial Waste Treatment
Storm Drainage & Flood Control
Municipal Planning & Development
Reports, Plans, Specifications & Construction Supervision
47 River Road Summit, N. J.

JOHN J. BAFFA
Consulting Engineers
Drainage
Swimming Pools
Sewerage
Water Supply & Treatment
Sewage Treatment
Industrial Wastes
Refuse Disposal
Rate Studies
75 West St. New York 6, N. Y.

SCOTT BAGBY
ROBERT CATLIN
Modern Comprehensive
City and Area
Planning and Development
"Plans Which Can Be Carried Out"
45 Broadway, Denville, N. J.
1500 Margaret S.E., Grand Rapids, Mich.

MICHAEL BAKER, JR., INC.
Consulting Engrs., Planners, Surveyors
Airport, Highway & Bridge Design; Water & Sewerage, Municipal Engrg.; Photo Mapping, City Planning, Urban Renewal & Redevelopment; Soils Lab; Complete Survey Service
Home Office: Rochester, Pa., Baker Bldg., Jackson Miss., Northview Dr., Charleston, W. Va., 19 Dunbar St., Harrisburg, Pa., 2799 N. Fourth St.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

ABBOTT & ADAMS INC.
Real Estate Appraisers & Consultants
Urban Renewal
Re-Use Appraisals
Economic Studies
Market Analysis
Marketabilty Programs
Redevelopment Studies
292 Madison Avenue, New York 17, N. Y.
MUrray Hill 6-1900

Abrams Aerial Survey Corporation
Over one-third century of Experience
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
Planimetric topographic maps and profiles. Large scale atlas sheets. Infra-red for forestry analysis.
606 E. SHIAWASSE STREET
LANSING 1, MICHIGAN

AERIAL SURVEYS, INC.
Maps and Aerial Photographs
For all Planning and Engineering Purposes
4614 Prospect Ave.
Cleveland 3, Ohio

EXPERIENCE COUNTS: Dependable Photo Maps, Topographic Maps, Tax Maps
AERO SERVICE CORPORATION
Oldest Flying Corporation in the World • Founded 1919
HEADQUARTERS: 210 E. Courtland St., PHILADELPHIA 20. OFFICES: 1401 S. Detroit St.
TULSA; 34 Richard St., SALT LAKE CITY 10; 68 Post St., SAN FRANCISCO

WEED CONTROL PROGRAMS
AQUATIC • TERRESTRIAL • HIGHWAY • STREET
ALLIED BIOLOGICAL CONTROL CORP.
19 Milk Street, Boston 9, Mass. • HAncock 6-7009
Biological Surveys Made of Weed Infested Water Recreation Areas

ALSTER & ASSOCIATES, INC.
ENGINEERS
PHOTOGRAMMETRIC ENGINEERING •
TOPOGRAPHIC & PLANIMETRIC MAPS •
AERIAL MOSAICS • PRECISE FIELD SURVEYS
6135 Kansas Ave., N.E. • TA 9-1167 • Washington 11, D. C.

JACK AMMANN, INC.
Thirty years of experience to serve you!
TOPOGRAPHIC · PLANIMETRIC · PLAN-PROFILE · DIGITAL DATA
AERIAL PHOTOGRAPHY, COLOR · BLACK AND WHITE · MOSAICS
ENGINEERS and SURVEYORS
Broadway at Tenth, San Antonio 5, Texas

AMERICAN AIR SURVEYS, INC.
Aerial Topo Maps • Aerial Photos & Mosaics • Tax Maps
907 PENN AVE., PITTSBURGH 22, PA.
BRANCHES: MANHASSET, N. Y.—ATLANTA, GA.—A NATIONWIDE SERVICE

The American City Professional Service Directory

Municipal Tax Revaluations
ASSOCIATED SURVEYS
29-31 Howe Ave., Passaic, N. J.
311 Bellemeade St., Greensboro, N. C.

Appraisals
Real and Personal Property Tax Maps
124 West Washington, Fort Wayne, Ind.
1105 Nelson Bldg., Charleston, W. Va.

B & B ENGINEERING CORPORATION
FIRE ALARM, TRAFFIC AND PROTECTIVE SIGNALING
MAIN OFFICE, NORWOOD, LOUISIANA
TELEPHONE, WILSON, LA., 46-J

JOHN J. BEHRENDS AND ASSOCIATES
Consulting Engineers
SPECIALIZING IN
TRAFFIC — PARKING — REPORTS — SURVEYS
801 SOUTH BLVD., OAK PARK, ILL.
ST. PETERSBURG, FLA.

BENHAM ENGINEERING COMPANY
and Affiliates
Oklahoma City, Oklahoma
Phoenix, Arizona

BLACK & VEATCH
Consulting Engineers
Water Supply, Water Purification, Electric Lighting, Power Plants, Sewerage, Sewage Disposal, Gas, Valuations, Special Investigations and Reports.
1500 Meadow Lake Parkway
Kansas City 14, Missouri

BROWN ENGINEERING COMPANY
Consulting Engineers
K. P. Building
Des Moines 9, Iowa

BUCHART-HORN
(BUCHART ENGINEERING)
55 S. Richland Ave.
York, Pa.
920 Columbia Ave.
Lancaster, Pa.

- Planning—Studies and Analyses—Reports—Design
- Municipal Sewer & Water Systems
- Commercial & Industrial Plants
- Subdivisions & Housing
- City Planning
- Highways & Bridges
- Schools & Parks
- Dams
- Airports

BUCK, SEIFERT AND JOST
Consulting Engineer
Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.
112 East 19th Street
New York 3, N. Y.

Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
B. F. Hatch
Raymond Fuller
Tehlman Krumm
R. E. Peters
Robert Wolfe

BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE
COLUMBUS 12, OHIO

Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

BANISTER ENGINEERING CO.
Consulting Engineers
Staffed to completely fill municipal requirements for professional services.
310 North Snelling Ave.
St. Paul 4, Minnesota
Tel. Midway 6-2612

E. D. BARSTOW
Sanitary Engineer
Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction
163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES
City Planners — Civil Engineers
Landscape Architects
317 N. 11th Street St. Louis, Mo.
815-17th Street Washington, D. C.
925 Bethel Street Honolulu, H.
188 Jefferson Ave. Memphis, Tenn.
120 Marietta St. Atlanta, Ga.

HOWARD K. BELL
CONSULTING ENGINEERS, INC.
Water Works
Swimming Pools
Industrial Wastes
Garbage Disposal
Sewerage
Drainage
Valuations — Rates — Reports
Operation Supervision
553 S. Limestone St. Lexington, Ky.

Black, Crow and Eidsness, Inc.
Engineers
Water, Sewerage, Power, Recalcination, Hydrology, Valuation
Rate Studies
Gainesville, Fla. Boca Raton, Fla.

CLINTON BOGERT ENGINEERS
Consultants
Clinton L. Bogert
Ivan L. Bogert
Donald M. Ditmars
Robert A. Lincoln
Charles A. Manganaro
William Martin
Water & Sewage Works
Incinerators
Drainage
Flood Control
Highway and Bridges
Airfields
145 East 32nd St., New York 16, N. Y.

Bonham, Kuck, Grant and Brundage
H. E. Bonham
Nye Grant
Carl E. Kuck
J. M. Brundage
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
4954-58 N. High St., Columbus 14, O.

LOUIS P. BOOZ
Consulting Engineer
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

Bowe, Albertson & Associates
Engineers
Sewage and Water Works
Industrial Wastes—Refuse
Disposal—Municipal Projects
Industrial Buildings—Reports
Plans—Specifications
and Operation—Valuations
Laboratory Service
75 West St., New York 6, N. Y.

Brtley, Wild & Associates
Consulting Engineers
Reports Supervision
Designs Appraisals
Consulations
8 N. Wild Olive Avenue
Daytona Beach, Florida

FLOYD G. BROWNE
AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory, Reports, Design, Supervision.
123 W. Church St., Marion, Ohio

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Invesigations, Reports, Designs, Supervision, Research, Development, Flood Control.
18 Tremont St., Boston 8, Mass.

CANDEUB, FLEISSIG &
ASSOCIATES
Consulting Municipal Planners
Community Planning, Urban Renewal Studies, Regional Planning.
32 Green Street, Newark 2, New Jersey

Capitol Engineering
Corporation
Consulting Civil Engineers
Dillsburg, Pennsylvania, U.S.A.

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste
Treatment—Power Plant—
Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
801 Suismon St.
Pittsburgh 12, Pa.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion **Smoke Control**
38 Park Row, New York 38, N. Y.

CLARK, DAILY AND DIETZ
Consulting Engineers
Sewerage, Waterworks, Street Lighting, Highway, Swimming Pools, Surveying and Mapping, Land Development Studies, Bridges, Buildings, Foundations.
211 North Race St. **188 Jefferson St.**
Urbana, Illinois **Memphis, Tennessee**

C. C. COLLINGS & CO., Inc.
Financial Consultants
Specialists in Direct Obligation, Revenue & Municipal Authority Financing
Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

BURGWIN & MARTIN
Consulting Engineers
Surveys, Reports, Design and Supervision
Bridges & Structures, Highways & Streets, Water Supply & Sewage Treatment, Dams, Foundations, Airfield, Traffic & Parking, Community Planning, Telephone Communications

408 W. Seventh St.
Topeka, Kansas

115 E. Armour Blvd.
Kansas City 11, Missouri

728 Delaware St.
Denver 4, Colorado

RALPH H. BURKE, INC.
Complete Consulting Engineering and Architectural Services
Plans Construction Supervision Reports
Expressway Grade Separations Municipal Works
Underground Garages Parking Structures Traffic Studies
Airports and Air Terminals Buildings Parks Field Houses Shore Protection
Swimming Pools Marinas Artifieal Ice Rinks
20 North Wacker Drive, Chicago 6, Ill. **506 Higgins Road, Park Ridge, Ill.**

BURNS & McDONNELL
ENGINEERS — ARCHITECTS — CONSULTANTS
4600 E. 63rd St. Trafficway **Kansas City 41, Missouri**

HOMER L. CHASTAIN & ASSOCIATES
Consulting Engineers
Civil, Structural, Mechanical, Industrial Design & Supervision, Construction, Engineering, Turnpikes, Bridges, Water Supply, Sewerage, Flood Control & Drainage, Material Controls, Municipal Engineering, Topographic Surveys.
155½ WEST MAIN STREET **DECATUR, ILLINOIS**

Chicago Aerial Survey
10265 Franklin Ave.
Franklin Park, Ill.
GLadstone 1-0380
A Division of Chicago Aerial Industries, Inc.

Aerial photography since 1923. Complete photogrammetric services for city, county, highway and consulting engineers. Developers of Sonne Strip Photography.

PHOTOGRAMMETRIC ENGINEERS
- Base maps and atlas sheets.
- Precise topographic maps for sewerage studies, construction planning and site location.
- Scaled mosaics and pictorial presentations.
- Highway studies. Street and road maps, Sonne photography.

CLARK AERIAL SURVEY CORP.
Custom Service
Topographic Maps — Mosaics — Reconnaissance
Strips — All Types of Aerial Photography
Frank T. Lodge II, President
45075 N. Territorial Rd. **GLenview 3-5430** **Plymouth, Michigan**

THE J. M. CLEMINSHAW COMPANY
"Our 38th Year"
APPRAISALS — REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
1601 BROOKPARK ROAD, CLEVELAND 9, OHIO

CHAS. W. COLE & SON
Engineers and Architects
3600 E. Jefferson Blvd.
South Bend, Indiana

2112 W. Jefferson St.
Joliet, Illinois

REVALUATIONS
CLT
APPRAISALS
COLE • LAYER • TRUMBLE CO. / 11 W. MONUMENT AVE. • DAYTON 2, O.
Municipal Tax Revaluations / Illustrated Brochure on Request

CONSOER, TOWNSEND & ASSOCIATES
Consulting Engineers
Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highways and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.
360 EAST GRAND AVENUE **CHICAGO 11, ILLINOIS**

The American City
Professional Service Directory

DAMON & FOSTER

Consulting Civil Engineers and Surveyors

Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning, Reports, Design, Supervision

Sharon Hill **Pennsylvania**

DAY & ZIMMERMANN, INC.

CONSULTING ENGINEERS

INCINERATOR PLANTS POWER PLANTS
VALUATIONS AND APPRAISALS TRAFFIC AND TRANSIT

NEW YORK PHILADELPHIA CHICAGO

DE LEUW, CATHER & COMPANY

Consulting Engineers

Public Transit Expressways Urban Renewal Railroad Facilities Municipal Works
Traffic & Parking Grade Separations Subways Industrial Plants Port Development

150 North Wacker Drive, Chicago 6 San Francisco New York Boston

DRAKETOWN®

PROPANE PLANTS

☆ Standby ☆ Augmentation 100% Town Supply

DESIGN • ENGINEERING • CONSTRUCTION

DRAKE & TOWNSEND, INCORPORATED

11 WEST 42nd STREET NEW YORK 36, N. Y.

EDWARDS AND KELCEY

Engineers and Consultants

Traffic — Transportation — Parking — Expressways — Airports — Public Works
Surveys — Reports — Design — Supervision

3 William Street, Newark 2, New Jersey

Boston Providence Salt Lake City New York Minneapolis

ELECTRICAL TESTING LABORATORIES, INC.

Electrical, Electronic, Environmental, Photometric and Chemical Laboratories, Testing, Research, Inspection and Certification
In-Plant Acceptance and Witness Testing
Wire and Cable—Paper—Street Lighting Fixtures
Checking of Instruments and Apparatus
2 EAST END AVENUE, NEW YORK 21, N. Y.

EMPIRE GAS ENGINEERING CO. • *P. O. Box 1738. Atlanta 1, Georgia*

LP-gas peak shaving and stand-by plants for
- municipalities
- industry
- design
- construction

EWIN ENGINEERING CORPORATION

Engineers — Consultants

Municipal Planning—Highways—Urban Renewal—Public Transit—Sewage Systems—Water Systems—Bridges—Port and Harbor Development

Washington 16, D. C.—5104 MacArthur Boulevard, N. W.

150 Savannah Street, Mobile, Alabama DuPont Plaza Center, Miami, Florida

36 YEARS OF CITY MAPPING EXPERIENCE

FAIRCHILD
AERIAL SURVEYS

Large scale photomaps . . . detailed topographic mapping . . . automatic cross sectioning . . . planimetric maps . . . for all planning and engineering uses.

Los Angeles: 224 E. 11th Street • New York: 10 Rockefeller Plaza • Boston: New England Survey Service, Inc., 255 Atlantic Ave. • Houston: 5043 Stillbrooke Drive • Washington, D. C.: 1625 I Street N.W.

Crawford, Murphy & Tilly

Consulting Engineers

Water Works—Impounding Reservoirs Highways — Municipal Streets — Expressways — Traffic Problems — Airports — Swimming Pools — Sewers Sewage Treatment, Wastes Treatment—Storm Drainage—Flood Control Surveys and Reports.

755 S. Grand Ave., W. Springfield, Ill.
LAKESIDE 8-5619

Fay, Spofford & Thorndike, Inc.

Engineers

Airports—Bridges—Express Highways Port Developments Water Supply Sewerage and Drainage Systems Industrial Buildings Incinerators

11 Beacon St.
Boston 8, Massachusetts

Finkbeiner, Pettis & Strout

Consulting Engineers

Water Supply, Water Treatment, Sewerage, Sewage Treatment, Bridges, Highways & Expressways.

2130 Madison Avenue, Toledo 2, Ohio

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

FRIDY-GAUKER-
TRUSCOTT & FRIDY

Architects—Engineers

Water Supply & Treatment, Sewers & Waste Disposal, Incineration, Roads, Airports, Power & Lighting, Schools, Private & Municipal Buildings.

Reports, Plans, Supervision

1321 Arch Street, Philadelphia 7, Pa.

GEE & JENSON
Consulting Engineers, Inc.

Municipal Utilities & Services
Ports & Terminals
Airports & Industrial Planning
Feasibility Reports — Land Planning
Cocoa — Ft. Myers — Dunedin
2019 Okeechobee Road,
West Palm Beach, Florida

GREELEY & HANSEN

Engineers

Water Supply, Water Purification Sewerage, Sewage Treatment Flood Control, Drainage, Refuse Disposal

14 East Jackson Blvd.
Chicago 4, Illinois

Haskins, Sharp & Ordelheide

Consulting Engineers

Water—Sewage & Industrial Wastes—Hydraulics Reports, Design, Supervision of Construction, Appraisals, Valuations, Rate Studies

1009 Baltimore Ave., Kansas City 5, Mo.

HAVENS AND EMERSON

A. A. Burger	H. H. Moseley
J. W. Avery	F. S. Palocsay
E. S. Ordway	G. H. Abplanalp
A. M. Mock	S. H. Sutton

Water, Sewerage, Garbage, Industrial Water, Valuations—Laboratories

Leader Bldg. **Woolworth Bldg.**
Cleveland 14, O. **New York 7, N. Y.**

The American City
Professional Service Directory

HAZEN AND SAWYER
Engineers
Richard Hazen Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
360 Lexington Ave., New York 17, N.Y.

ANGUS D. HENDERSON
Consulting Engineers
Angus D. Henderson, Thomas J. Casey
Water Supply and Sanitation
330 Winthop St., Westbury, N. Y.
210-07 29th Ave., Bayside, N. Y.

Harry Hendon & Associates, Inc.
Engineers
Civil Engineers — Public Utilities
Investigations — Designs
Supervision of Construction
P. O. Box 7404A Birmingham 13, Ala.
925 Sligh Blvd. Orlando, Florida

HENNINGSON DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
2962 Harney St., Omaha 2, Nebraska

HILL and HILL
Engineers
Sewage and Waste Disposal,
Water Supply and Filtration
Dams, Reservoirs, Tunnels,
Airport and Topographic Survey
Home Office: 8 Gibson Street
North East, Pa.

Grand Junction, Colorado
P. O. Box 1915 - CH 3-1887
Holder Engineering Service
Civil Engineering Consultants
Specializing in Water Supply and Sewage Problems.
Moab, Utah, P. O. Box 562—AL 3-4126
Laramie, Wyoming
P.O. Box 284 - FR 5-6741

H. G. Holzmacher & Associates
Consulting Engineers
R. G. Holzmacher S. C. McLendon
Municipal Engineering
Water Supply & Treatment
Sewerage & Treatment
Water Analysis Laboratory
500 Broad Hollow Rd., Melville, N. Y.
66 West Marie St., Hicksville, N. Y.

C. H. HOPER & COMPANY
Utilities Engineers
Electric—Gas—Water—Sewer
Rates ● Financial and Economic Analyses ● Planning ● Feasibility Reports ● Valuations ● Organization and Management Studies
818 Seventeenth St. Denver 2, Colo.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

Ford, Bacon & Davis
Engineers
Design
Construction
Reports
Valuation
New York • Chicago • San Francisco • Monroe, La.

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewage, Industrial Wastes and Garbage Disposal, Highways, Bridges and Airports
Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENN.
Branch Offices
Pittsburgh, Pa. Daytona Beach, Florida Philadelphia, Pa.

GIBBS & HILLS, INC.
Industrial Wastes
Water & Sewage Works
Hydraulic Developments
Electric Transmission & Distribution Systems
Conventional & Nuclear Power Generation
Power Suveys & Contracts
Airports
Rapid Transit
Highways & Bridges
Pennsylvania Station, New York 1, N. Y.

GAI
FOUNDED 1906
GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
Water Supply and Purification
Sewage Industrial Waste
Chemical Laboratory
New York READING, PA. Washington

HOWARD R. GREEN COMPANY *Established 1913*
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
GREEN ENGINEERING BUILDING, CEDAR RAPIDS, IOWA

Charles W. Greengard Associates
consulting engineers
CHARLES W. GREENGARD ASSOCIATES
CIVIL • SANITARY • MUNICIPAL • UTILITY
Reports — Plans — Supervision — Appraisals
DEERFIELD ILLINOIS

GRIFFENHAGEN-KROEGER, INC.
Consultants in Public Management
Experienced in City Organization and Methods—Finance—Personnel Practices—Departmental Policies and Practices—Automatic Data Processing—Complete Personnel Testing Services
64 Pine Street
San Francisco
Other Offices: Los Angeles, New York, Washington, D. C., Chicago, Philadelphia

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on Sewage and Industrial Waste Treatment.
102 East Fairfax St. Falls Church, Va.

Hardesty & Hanover
Consulting Engineers
Bridges — Long Spans of All Types — Movable — Lift, Bascule and Swing — Hanover Skew Bascule — Steel and Concrete Spans — Grade Crossing Eliminations
Expressways and Thruways — Other Structures — Foundations — Supervision, Reports, Appraisals
101 Park Avenue New York 17, N. Y.

FREDERIC R. HARRIS, INC.
Consulting Engineers
Economic Reports, Feasibility Studies, Design, Supervision of Construction, Waterfront and Harbor Improvements—Water Supply—Sanitary and Industrial Waste Disposal—Highways Foundations—Soil Mechanics
144 East 44th Street
New York 17, N. Y.
1915 Tulane Avenue
New Orleans, Louisiana

HARRIS, HENRY and POTTER, INC.
Engineers—Architects
Water Supply, Sewerage Systems, Flood Control, Bridges, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations
Chester, Pa.
Buckingham, Pa.

HARZA ENGINEERING COMPANY
Consulting Engineers
Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigations
River Basin Development
400 W. Madison Street
Chicago 6, Ill.

HEATH
Survey Consultants, Inc.
Zero Laurel Ave.
Wellesley Hills 81, Mass.

GAS LEAKAGE CONTROL SURVEYS
- Provide SAFETY & a 3rd Party Audit
- Reduce unaccounted-for losses
- Assist in economical & effective maintenance-repairs
- Conserve & protect Natural Resources

HEMCO ENGINEERS
Sewerage & Wastes
Natural Gas
Municipal Services
Designers & Consultants
FALLS BUILDING MEMPHIS
Water Supply
Foundations
Bridges & Structures

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting Engineers
Bridges, Structures, Foundations, Express Highways, Administrative Services
1805 Grand Avenue
Kansas City 8, Mo.
99 Church Street
New York 7, N. Y.

HUNNICUTT & ASSOCIATES
433 FOURTH ST., NO.
ST. PETERSBURG, FLA.
COUNTY and MUNICIPAL
REVALUATION
ASSESSMENT MAPS
CONSULTANT SERVICE
OVER 30 YEARS' EXPERIENCE
Brochure on request

MARK HURD AERIAL SURVEYS, INC.
Aerial Photography
Tax Maps
Topographic and Planimetric Maps
345 Pennsylvania Avenue South
Minneapolis 26, Minnesota

WILLIAM T. INGRAM
Consulting Engineer
Water
Sewage
Refuse
Sanitary and Public Health Engineering
Planning—Design—Research
Industrial Wastes
Air Pollution Control
Industrial Health
Offices: East Coast
20 Point Crescent, Whitestone 57, N. Y.
West Coast
90 Panoramic Way, Walnut Creek, Calif.

International
AERIAL MAPPING COMPANY
127 AIRPORT BLVD ★ SAN ANTONIO 9, TEXAS
TAYLOR 6-8661
PRESENTS A MUNICIPAL PROGRAM
OF
AERIAL PHOTOGRAPHY-PHOTO ATLAS SHEETS
MOSAICS AND TOPOGRAPHIC MAPS
WRITE FOR FREE COPY

HORNER & SHIFRIN
Consulting Engineers
E. E. Bloss V. C. Lischer
Airports, Sewerage & Drainage, Hydrology, Sewage Treatment, Industrial Waste Treatment, Water Supply & Treatment, Paving, Structures, Industry Engineering Services
1221 Locust Street St. Louis 3, Mo.

Harold Hoskins & Associates
Consulting Engineers
Sewers and Sewage Treatment
Paving Water Supply Drainage
Bridges Airports Reports
Power Plants Surveys
Aerial Photogrammetry
1630 Que St. Lincoln, Nebr.
1018 8th Ave. Greeley, Colorado

ROBERT W. HUNT CO.
Engineers
Inspection—Tests—Consultation
Pipe and Appurtenances; Paving and Engineering Materials; Green and Treated Lumber
810 S. Clinton St., Chicago 7
and all large industrial centers.

Bring Your Professional Services
to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

Jenkins, Merchant & Nankivil
Consulting Engineers
Municipal Improvements Gas Systems
Highways & Airports Water Systems
Power Development Sewerage Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Investigations and Reports
801-805 East Miller St.
Springfield, Ill.

THE JENNINGS-LAWRENCE CO.
Civil & Municipal Engineers
Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams Surveys—Mapping
Reports Plans—Supervision
1392 King Ave. Columbus 12, Ohio

Johnson & Anderson, Inc.
Engineers
Sewerage & Sewage Treatment
Water Supply & Distribution
Bridges—Highways
Municipal Engineering
Flood Control and Drainage
Home Office: Pontiac, Mich.
Branch Office: Warren, Mich.

Johnson Depp & Quisenberry
Consulting Engineers
Highways Water Supply
Airports Sewage Disposal
Bridges Surveys
2625 Frederica St., Owensboro, Ky.

JONES, HENRY & WILLIAMS
Consulting Sanitary Engineers
Water Works
Sewerage and Treatment
Waste Disposal
2000 West Central Ave.
Toledo 6, Ohio

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

The American City Professional Service Directory

Edward C. Jordan Co., Inc.
Civil and Sanitary Engineers
Sewerage ● Sewage Disposal ● Industrial Wastes ● Drainage ● Water Supply ● Streets ● Highways ● Municipal Engineering. Investigations—Reports—Designs—Supervision.
379½ Congress St., Portland, Maine
Tel. SP. 40313

Alfred Kaehrle Associates
Consulting Engineers
Highway Planning—Highway Design
Traffic Engineering Surveys
Parking Studies —Shopping Centers
10 North Main Street
West Hartford 7, Connecticut

SANDERS A. KAHN ASSOC.
Real Estate—Planning
Urban renewal appraisals, marketability studies, shopping centers, industrial, terminals, aviation.
261 Madison Ave.
New York 17, New York
MUrray Hill 7-3363-4

KAISER ENGINEERS
General Engineering Services
Public Works
300 Lakeside Drive
Oakland 12, Calif.
Phone: CRestview 1-2211

JOHN J. KASSNER & CO.
Consulting Engineers
John J. Kassner David Levine
Preliminary Studies, Designs, Contracts, Specifications, Highway, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning, Housing, Parking, Parks.
6 Church St. New York 6, N. Y.

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment. Garbage and Refuse Disposal and Incineration, Industrial Buildings.
TROY, N. Y.

Kirkham, Michael & Associates
Consulting Engineers
Complete Municipal & Industrial Services—Investigations, Reports, Design, Supervision of Construction, Rates. Water—Sewage & Wastes—Light & Power—Streets—Airports—Bridges & Structures.
Omaha ● Rapid City ● Fargo

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
7800 The Paseo
Kansas City 10, Mo.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures
Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILL.

KREHBIEL & KREHBIEL · engineers
Consulting
DRAINAGE PLANNING SEWERAGE WATER
HIGHWAYS POOLS SUBDIVISIONS
ICE RINKS REPORTS SURVEYS
1868 NIAGARA FALLS BOULEVARD • TONAWANDA, N. Y.

KENNEDY ENGINEERS
COMPLETE PUBLIC WORKS ENGINEERING SERVICE
- WATER SUPPLY
- SEWAGE RECLAMATION
- SEWAGE AND WASTE TREATMENT

CHEMICAL AND BIOLOGICAL LABORATORY
San Francisco
Los Angeles
Tacoma
Salt Lake City

KUCERA AND ASSOCIATES, INC.
PHOTOGRAMMETRIC ENGINEERS • AERIAL PHOTOGRAPHY
CLEVELAND 24, OHIO • CHICAGO, ILLINOIS
City Mapping • Aerial Engineering Surveys • Tax Maps • Atlas Sheets • Photo Mosaics • Nationwide Service

KONSKI ENGINEERS
Parking Studies and Parking Structures
Bridges, Highways, Dams, Airports and Industrial Structures
Planning, Design and Supervision of Construction
206 E. Jefferson Street Syracuse 2, New York

The Kuljian Corporation
engineers • consultants
construction supervision
Designs • Surveys
Planning
1200 NORTH BROAD STREET, PHILADELPHIA 21, PA.
POWER PLANTS, AIRPORTS and AIRPORT FACILITIES
HIGHWAYS, EXPRESSWAYS,
WATER and SEWAGE WORKS,
FLOOD CONTROL, IRRIGATION
INDUSTRIAL PLANTS

KOEBIG and KOEBIG
ENGINEERING • ARCHITECTURE • MUNICIPAL PLANNING
Reports • Investigations • Designs • Consultants to Cities Since 1910
3242 W. 8th Street, Los Angeles 5, California
715 Bank of America Building, 625 Broadway, San Diego, California

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS
Studies — Reports — Designs — Supervision
Highways, Bridges, Site Planning, Industrial Buildings, Pipelines, Airports, Harbor Facilities, Traffic Analysis, Water Supply, Sewerage, Incinerators, Air Pollution, Seismic Investigations in addition to Aerial Photography, Cadastral Geodetic, Topographic and Photogrammetric Mapping.
Syosset, N. Y. Bogota, Columbia San Juan, P. R.

METCALF & EDDY
Engineers
Soils, Foundations, Waterworks, Sewage Works, Drainage, Irrigation, Flood Control, Refuse, Industrial Wastes, Airports, Highways, Military Projects, Industrial and Commercial Facilities.
Statler Building, Boston 16, Mass.

The American City
Professional Service Directory

PAN AMERICAN CONSULTANTS
Engineers and Planners
Airports—Highways—Expressways—Rapid Transit—Monorail
City & Regional Planning—Urban Renewal—Commercial & Industrial Structures
Hydrology—Hydraulics—Flood Control—Basin Development—Dams—"Sea Water Conversion"
Waterways—Harbors—Marinas—Offshore Structures
Investigations—Reports—Planning—Design
400 Montgomery St., San Francisco 4, Calif. YUkon 1-8979

NATIONAL TRAFFIC ANALYSTS
Serving Business, Industry and Governmental Agencies
SITE LOCATIONS • TRAFFIC COUNTING • PEDESTRIAN COUNTING • POPULATION ESTIMATES
CONSUMER SURVEYS • PRODUCTION COST ANALYSIS • QUALITY CONTROL ANALYSIS
CAPITAL FUNDS ANALYSIS • ORIGIN AND DESTINATIONS STUDIES FOR GOVERNMENTAL AGENCIES
1276 E. DELAVAN AVENUE, BUFFALO 15, NEW YORK TX 2-0021

NUSSBAUMER -- CLARKE and VELZY, INC.
CONSULTING ENGINEERS
SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS
327 Franklin St., Buffalo 2, N. Y. 500 Fifth Ave., New York, N. Y.

PARSONS, BRINCKERHOFF, QUADE & DOUGLAS
Engineers
Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Canals,
Traffic, Parking and Transportation Reports, Power, Industrial Buildings,
Housing, Sewerage and Water Supply.
165 Broadway, New York 6, N. Y.

THE PITOMETER ASSOCIATES, INC.
Engineers
Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations
50 Church Street New York 7, N. Y.

ARE YOU A CITY OFFICIAL?

You will find this Directory a reliable "WHO'S WHO" of consulting engineers who specialize in municipal work.

WILLIAM RAISCH
CONSULTING ENGINEER
REPORTS AND DESIGNS
REFUSE INCINERATOR AND SEWAGE TREATMENT PLANTS
MUNICIPAL AND INDUSTRIAL SEWAGE AND WASTES DISPOSAL
SEWERAGE AND DRAINAGE
61 HILTON AVE. GARDEN CITY, L. I., N. Y.

RAYNOR AERIAL SURVEYS
Topographic Maps City Planning Tax Maps Field Surveys
Complete Photogrammetric Services
MAIN OFFICE: CHASE BUILDING, NEW FAIRFIELD, CONN.
District offices: West Sand Lake N. Y. and Plymouth, N. H.

THOMAS M. RIDDICK & ASSOCIATES
Consulting Engineers and Chemists
369 EAST 149th STREET
NEW YORK 55, N. Y.
MOtt Haven 5-2424

WATER PURIFICATION
SEWAGE TREATMENT
PLANT SUPERVISION
CORROSION CONTROL
INDUSTRIAL WASTE TREATMENT
STREAM POLLUTION INVESTIGATIONS

LABORATORIES FOR
CHEMICAL
BACTERIOLOGICAL AND
MICROSCOPIAL ANALYSES
OF WATER, SEWAGE AND
INDUSTRIAL WASTES

MORRIS KNOWLES Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
1312 Park Bldg.
Pittsburgh 22, Pa.

LADD ENGINEERING ASSOCIATES
Architects—Engineers
Municipal Public Works
FORT PAYNE ALABAMA

HAROLD M. LEWIS
Consulting Engineer, City Planner
Municipal & Regional Planning
Comprehensive and Master Plans
Zoning—Traffic and Parking Studies
Urban Renewal and Redevelopment
Reports—Plans—Ordinances
15 Park Row New York 38, N. Y.

Lorenzi, Dodds and Gunnill
Consulting Engineers
Serving Municipalities in Pennsylvania, Ohio, and West Virginia
1406 Berger Building
Pittsburgh 19, Pa.

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

LOZIER CONSULTANTS, INC.
Engineers
Sewerage, Sewage Disposal
Water Supply, Water Purification
Refuse Disposal
10 Gibbs St., Rochester 4, N. Y.

Lublin, McGaughy & Assoc.
Architects and Consulting Engineers
Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreation facilities, reports and appraisals.
220 W. Freemason St., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D C.

McCLAVE & McCLAVE
Civil & Consulting Engineers
Established 1906
Municipal Problems, Surveys, Reports, Design, Supervision, Industrial Waste, Sewerage and Water Supply
Flood Control, Highways, Land Development
Cliffside Park, New Jersey
Tel. Cliffside 6-4000

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

The American City Professional Service Directory

McNamee, Porter and Seeley
Consulting Civil Engineers
Water Supply and Treatment
Sewerage and Sewage Treatment
Waste Disposal
2223 Packard Road
Ann Arbor, Michigan

GEORGE B. MEBUS, INC.
Consulting Engineers
Water Supply, Sewage Treatment
Industrial Waste Treatment
Broad Street Trust Bldg.
Glenside, Pa.

CHANGED YOUR ADDRESS?

If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

DONALD M. OAKES
Public Management Consultant
2518 Foster
Grand Rapids 5, Michigan

O'BRIEN & GERE
Consulting Engineers
Water Supply, Treatment and Distribution
Sewerage and Sewage Treatment
Industrial Waste Treatment—Flood Control and Drainage
Rate Studies—Development Planning—Surveys
400 East Genesee St., Syracuse 2, N. Y.

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

Malcom Pirnie Engineers
Malcolm Pirnie, Carl A. Arenander
E. W. Whitlock, Malcolm Pirnie, Jr.
Robert D. Mitchell, Alfred C. Leonard
MUNICIPAL AND INDUSTRIAL
Water Supply—Water Treatment
Sewage and Waste Treatment
Drainage—Rates—Refuse Disposal
25 W. 43rd St. New York 36, N. Y.
3013 Horatio Street, Tampa 9, Fla.

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
50 Church Street, New York 7, N. Y.

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

Louis C. Ripa & Associates, Ltd.
Designers—Engineers
Planners—Surveyors
184 S. Livingston Ave., Livingston, N. J.

DESIGN, INVESTIGATION, REPORTS, PARKS, RECREATION AREAS, HIGHWAYS, EXPRESSWAYS, OFFICE AND COMMERCIAL BUILDINGS, RESIDENTIAL SUBDIVISIONS, TRAFFIC STUDIES, GEODETIC, GEODIMETER, TOPOGRAPHIC SURVEYS, SITE PLANNING, SHOPPING CENTERS

ROBERT AND COMPANY ASSOCIATES
Engineering Division
ATLANTA
Water Supply
Sewage Disposal
Industrial Wastes
Incinerators
Power Plants
Valuations

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street
St. Louis 2, Mo.
Municipal Airport
Daytona Beach, Fla.

SANBORN MAP CO., INC. *(Est. 1876)*
Dept. SP, Pelham, New York, Pelham 8-1649
NEW NATIONWIDE MAPPING, FIELD, AND ANALYTICAL SERVICES
ALL TYPES BASE MAPS — CUSTOM DESIGNED SERVICES FOR
PLANNERS, ASSESSORS, PUBLIC UTILITIES, MARKET ANALYSTS, ENGINEERS
Atlanta
New York
Chicago
San Francisco

IRBY SEAY COMPANY
Consulting Engineers
WATER SUPPLY & TREATMENT
ELECTRICAL
SEWAGE SYSTEMS & TREATMENT
NATURAL GAS
Goodwyn Institute Bldg. MEMPHIS 3, TENNESSEE Jackson 7-3301

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Bridges, Concrete, Steel, Welding, Foundations, Stadiums,
APPRAISALS and REVALUATIONS for tax equalization
101 Park Avenue
New York 17, N. Y.

SERVIS, VAN DOREN & HAZARD
Engineers-Architects
Investigations • Design • Supervision of Construction • Appraisals
Water • Sewage • Streets • Expressways • Highways • Bridges • Foundations
Airports • Flood Control • Drainage • Aerial Surveys • Site Planning
Urban Subdivisions • Industrial Facilities • Electrical • Mechanical
2910 Topeka Blvd.
Topeka, Kans.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

STANLEY ENGINEERING COMPANY
Consulting Engineers
Hershey Building, Muscatine, Ia.
208 S. LaSalle St., Chicago 4, Ill.

The American City
Professional Service Directory

HAROLD S. PRESCOTT
Consulting Civil Engineer
Design—Supervision
Water Supply—Sewerage—Dams
Subdivision & Industrial Development
504 Main St. Placerville, Calif.

Charles C. Redman, Jr.
Engineers & Surveyors
Complete Municipal Engineering, Surveying, Mapping and Planning Services.
P. O. Box 62 Kennett, Missouri
210 Monroe Jefferson City, Missouri

ARTHUR E. ROWE & ASSOCIATES
Municipal Buildings, Swimming Pools, Parking Facilities, Incinerators, Stadia, etc.
3115 Prospects Ave., Cleveland 15, O.

Schmidt Engineering Co., Inc.
Consulting Engineers
Reports, Design, Construction Supervision, Heavy Construction Project,
Dams, Hydroelectric,
Wate and Sewerage Works
Foundation Exploration and Treatment
100 East 10th St., Chattanooga 2, Tenn.

ROBERT H. STELLWAGEN
Consulting Engineers
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
1442 E. Outer Drive Detroit 34, Mich.

STETSON, STRAUSS & DRESSELHAUS, INC.
Civil & Consulting Engineers
Los Angeles Oceanside Porterville
Investigations, Reports, Designs, Estimates
Water Supply, Drainage, Sewerage, Municipal Works, Foundations, Materials Testing, Surveying & Mapping
Main Office: 215 W. 7th St., Los Angeles 14, California

ALDEN E. STILSON & ASSOCIATES, LIMITED
Consulting Engineers
Water Supply, Sewerage, Industrial Wastes, Bridges, Highways, Industrial and Power Plant Layout, Materials Handling, Process Layouts, Studies, Surveys and Reports.
245 North High St., Columbus 15 Ohio 75 Public Square, Cleveland 13, Ohio

TIGHE & BOND
CONSULTING ENGINEERS
BOWERS AND PEQUOT STREETS
HOLYOKE, MASSACHUSETTS
TEL. JEfferson 3-3991
CIVIL, SANITARY AND ELECTRICAL ENGINEERING
INVESTIGATIONS, REPORTS, PLANS AND SPECIFICATIONS
SUPERVISION OF CONSTRUCTION AND OPERATION

TOLEDO TESTING LABORATORY
Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests
1810 North 12th Street Toledo 2, Ohio

Trafficwise Process Co.
520 Fifth Ave. New York 36, N. Y.
Methods for progressing heavy traffic in small block cities. Primary-secondary coordination with high conducting power. Systematic coordination between highway and street traffic.
John K. Masten, Consultant, Pats. 3,926,332—3,926,333.

ARNOLD H. VOLLMER ASSOCIATES
Consulting Engineers
Parks — Playgrounds — Pools
Water Supply — Sewerage — Waste Disposal — Air Pollution
Traffic and Parking
25 West 45th Street
Boston New York Louisville

CONSULTING ENGINEERS
not already represented in this directory can secure rates for these cards and further particulars of our service by writing to—
Advertising Department
THE AMERICAN CITY
470 Park Avenue South New York 16, N. Y.

CARL SCHNEIDER
Consulting Engineers
602 Pan American Bldg.
New Orleans 12, La.
Incineration Sanitary Fills
Refuse Collection Sanitation Studies
Reports

JOSEPH A. SCHUDT AND ASSOCIATES
Civil Engineers—Surveyors
Surveying, Land Planning Complete Municipal Services
Specializing in Subdivision Development
2451 Western Ave., Park Forest, Illinois

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

SCRUGGS & HAMMOND
Specializing in small city Planning and Zoning, Landscape Architecture, Parks, Schools, Subdivisions.
330 Central National Bank Bldg.
Peoria, Ill.
New Circle Road, Lexington, Kentucky

Ladislas Segoe & Associates
City Planners—Consulting Engineers
Comprehensive City, County and Regional Plans ● Zoning Plans and Ordinances ● Traffic and Parking Studies ● Shopping Centers and Industrial Parks ● Urban Redevelopment and Renewal Projects.
811 Gwynne Bldg., Cincinnati 2, Ohio

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

John R. Snell
ENGINEERS
Inc. 221 N. Cedar • Lansing, Mich. • IV 4-9493
Water and Sewage • Industrial Wastes • Refuse Disposal • Highways and Streets • Airports and Harbors • Bridges and Structures • Soils and Foundations • Urban Planning • Research and Development

SOIL TESTING SERVICES, Inc.
Consulting Engineers
John P. Gnaedinger Carl A. Mets
Soil Investigation, Engineering Reports, Inspection, Foundation Design.
1827 N. Harlem Ave., Chicago 35, Ill.
San Francisco; Kenilworth, N. J.; Havana, Cuba; Milwaukee, Wis.; Portland, Mich.

The American City
Professional Service Directory

SOUTHERN MAPPING & ENGINEERING CO.
Consulting Civil Engineers
Planners and Surveyors; Airports and Highway Design; Water Works and Sewage Design; Topography; Tax Mapping Reports and Investigations; Pipe Line Surveys, Acquisition of Right of Way.
216½ Commerce Place, Greensboro, N. C.

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply, Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision
620 Court St., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

J. B. WILSON
521 K. of P. Bldg.
Indianapolis 4, Indiana
Sewers, Sewage Treatment.
Waterworks, Water Treatment.
Gas Systems

James O. Yarger and Associates
Personnel & Management Services
Administrative and Fiscal Surveys ● Position Classification and Salary Plans ● Retirement Systems ● Personnel Ordinances & Regulations
An experienced senior staff for your use
300 Walnut St., Falls Church, Virginia

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
3338 North Illinois Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

WILSEY, HAM & BLAIR
Engineers and Planners
Water and Sewage Works
Flood Control and Drainage
Airports, Traffic Studies and Bridges
City and Regional Planning
Utilities Rate & Valuation Studies
800 W. Colorado Blvd. Los Angeles 41
111 Rollins Road, Millbrae, California

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

J. C. ZIMMERMAN ENGINEERING CO.
Consulting Engineers
Water Supply and Treatment
Drainage—Flood Relief
Sewerage and Sewage Treatment
Planning Design Supervision
11121 West Oklahoma Avenue
West Allis 19, Wisconsin

OSCAR SUTERMEISTER
City Planning Consultant
City and Regional Comprehensive Plans—Planning, Zoning, Subdivision and Housing Laws—Protective Covenants—Industrial Park Design—Performance Standards—Traffic—Urban Defense.
5923 Johnson Ave., Bethesda, Md.
Washington 14, D. C.

WAINWRIGHT & RAMSEY
Inc.
Consultants on Municipal Finance
70 Pine Street
New York 5, N. Y.

TIPPETTS-ABBETT-McCARTHY-STRATTON
Engineers and Architects
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Designs, Supervision, Consultations.
375 Park Ave. New York 22, N. Y.

J. STEPHEN WATKINS
J. S. WATKINS
CONSULTING ENGINEERS
G. R. WATKINS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highway and Structures, Reports, Investigations and Rate Structures

Main Office:
416 East High Street, Lexington, Kentucky

Branch Offices:
5402 Preston Highway, Louisville, Kentucky
107 Hale Street, Charleston, W. Va.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who' among Consulting Engineers Specializing in Municipal Work.

LEONARD S. WEGMAN CO.
Consulting Engineers
Refuse Disposal, Water Supply, Sewage Collection & Treatment, Highways, Bridges, Special Structures, Shore Erosion & Waterfront Works
235 East 45th Street
New York 17, N. Y.

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations
Supervisor of Purification Plants
14 Beacon St. Boston, Mass.

ROY F. WESTON, INC.
Engineers — Biologists — Chemists
Industrial Wastes — Stream Pollution — Air Pollution — Water-Sewage
Surveys—Research—Development—Process-Engineering—Plans and Specifications—Operation Supervision—Analyses—Evaulations and Reports
NEWTON SQUARE, PA.

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. Boston, Mass.

WALTER H. WHEELER
Consulting Engineers
Design supervision of Construction, Bridges, Buildings, Parking Garages, Foundations, Coffer Dams, Grain Elevators, Flat Slabs with grillage caps, Special Structures.
802 Metropolitan Building
Minneapolis 1, Minnesota

WHITMAN, REQUARDT AND ASSOCIATES
Engineers
Baltimore 2, Md.

GEORGE WIGHT
Consulting Engineers
446 East Main Street
Barrington, Illinois

25 South Washington
Naperville, Illinois

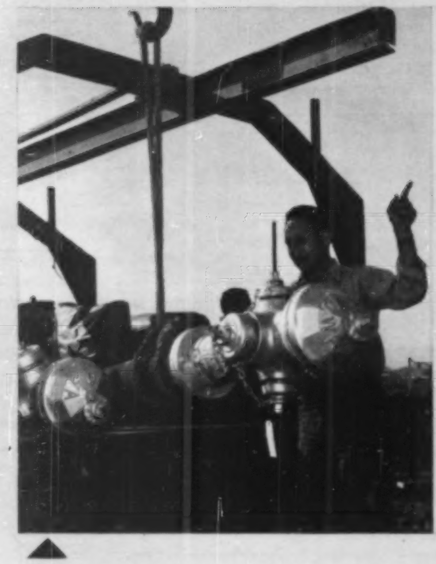
WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
760 W. Peachtree St., N.W.
Atlanta 8, Ga.

WILSON & COMPANY
Engineers & Architects
Water, Sewerage, Streets, Highways, Dams, Bridges, Electrical, Airfields
Chemical Testing Lab—Aerial Mapping—Electrical Computer Services
SALINA, KANSAS
WICHITA, KANSAS

IOWA Valves and Hydrants

by the carload to meet San Jose Water Works' growing requirements

Glimpse of new subdivision of San Jose, California. City has grown from 95,280 to 202,571 in past ten years.



Unloading scene as IOWA hydrants are delivered by the carload to San Jose Water Works.

Two IOWA gate valves and a new hydrant being installed. Hundreds of these Iowa products are important components of San Jose's modern system.

Carloads of IOWA gate valves and hydrants were purchased by the San Jose Water Works (an investor-owned, private company established in 1866) for installation in their rapidly expanding system which serves seven cities and unincorporated areas in Santa Clara County, California.

Over 17,000 new water service connections were made in the last two years along 1200 miles of water mains to help care for a metropolitan population (Approx. 306,000) which has doubled since 1950.

IOWA products were selected to be a part of the San Jose Water Works' growth because of their proved dependability with minimum maintenance and assurance of long-life performance.

Every year more and more IOWA valves and hydrants are installed to serve the needs of growing communities like San Jose. Experience shows that IOWA products have that extra quality of materials, that extra-precise fitting and assembly that makes for longer life and easier maintenance.

Let us send you details on the complete IOWA line

IOWA VALVE COMPANY
Oskaloosa, Iowa
Subsidiary of James B. Clow & Sons, Inc.

a CLOW *Subsidiary*

Index to Advertisers

Professional Service Directory, 195-205

Aeroil Products Co., Inc 163
Alabama Pipe Co 182
American Bitumuls & Asphalt Co 77
American Steel & Wire Div., United States Steel 82, 83
American Telephone & Telegraph Co 4
Anchor Post Products, Inc., Fence Div. 165
Asplundh Chipper Co 182
Auto Crane Co 189
Automatic Signal Div., Eastern, Ind., Inc 128
Automatic Voting Machine, Div. of Rockwell Mfg. Co 167

Badger Meter Co 51
Baughman Mfg. Co 187
Bell Telephone System 4
B-I-F Industries, Inc 168
Buffalo Turbine Agricultural Equipt. Co., Inc 188

Case Co., J. I 166
Cast Iron Pipe Research Association. 16, 17
Catalytic Combustion Corp 164
Caterpillar Tractor Co 10, 18, 21, 193
Chevrolet Motor Div 150, 151
Chicago Bridge & Iron Co 76
Clark Equipment Co., Constr. Mach. Div 210
Cleminshaw Co., The J. M 184
Clow & Sons, James B 48, 49
Colorado Fuel and Iron Corp 87
Cone, Frederick & Co 170
Construction Machinery Co 173
Cook Well Strainer Co 52
Cooper-Bessemer Corp 174
Crouse-Hinds Co 136

Dana Corp 85
Darley & Co., W. S 165
Deere Industrial Div 29
Dempster Brothers, Inc 156, 157
Designers Metal Corp 191
Detroit Leland Hotel 191
Diamond Crystal Salt Co 75
Dolge Company, C. B 172
Dorr-Oliver Inc 162
Drott Mfg. Corp 44, 45
Duncan Parking Meter Corp 145

Eagle Signal Co 65
Equipment Development Co 182
Etnyre & Co., E. D 177
Evanite Plastic Co 80
Evinrude Motors 147
Expanding Sewer Machine Co 170

Fitchburg Engineering Corp 70
Flexible, Inc 60
Flex-O-Lite Mfg. Corp 208
Ford Meter Box Co., Inc 175
Ford Motor Co 12, 13
Ford Motor Co., Tractor and Implement Div 54

Gamewell Co 42
Gar Wood Industries 78, 79
General Electric Co., Large Lamp Dept. 138
Gledhill Road Machinery Co 181
Glenfield & Kennedy, Inc 86
Goldak Co 188
Good Roads Machinery Corp 190

Hamilton-Kent Mfg. Co 140
Hayward Co 178
Homelite Corp 154, 155
Howard Rotavator Co 24
Huber-Warco Co 209
Hydrauger Corp., Ltd 172

Indiana Gunite & Construction Co., Inc 180
Industrial Blow Pipe Co 172
International Business Machines 66
International Harvester Co 44, 45
Iowa Valve Co 206

Jaeger Machine Co 59

Kasten Mfg. Co 71
Kern Instruments, Inc 180
Kerrigan Iron Works Co 146
Klett Mfg. Co 184
Komline-Sanderson Engineering Corp 186

Lathem Time Recorder Co., Inc 178
Layne & Bowler, Inc 41
Line Material Industries 133
Lock Joint Pipe Co 6
Locke Steel Chain, Lawn Mower Div 67

M & H Valve & Fittings Co 63
Mack Trucks, Inc 30, 31
Magee-Hale Park-O-Meter Co 124
Marbon Chemical Co 148
Massey-Ferguson, Industrial Div 14, 15
Minnesota Mining & Mfg. Co 72, 73
Miro-Flex Co., Inc 144
Mitts & Merrill 169
Moline Malleable Iron Co 74
Morse Boulger, Inc 147
Morton Salt Co 53
Motorola Communications & Electronics, Inc 27
Mueller Co 2, 57

National Chemsearch Corp 22
National Clay Pipe Mfg. Co., Inc 19
National Cylinder Gas 186
National Plastic Products Co 170
Neenah Foundry Co 158
Neptune Meter Co 34, 35, 36, 37, 38, 39
Newark Brush Co 58
Nordberg Mfg. Co 88
Northern Gravel Co 190

O'Brien Mfg. Co 8
Opelika Foundry Co 177

Parsons Company 64
Pettibone-Mulliken Corp 81
Pick-Nicollet, The 178
Price Brothers 32

Radiator Specialty Co 177
Radio Corp. of America 121
Revere Electric Mfg. Co 142
Rockwell Mfg. Co 61
Rolatape, Inc 194
Rosco Mfg. Co 176
Ruemelin Mfg. Co 181
Rynal Corp 149

Sanfax Co 46
Seiscor Voting Machine Co., Div. Seismograph Service Corp 84
Smith-Corona-Marchant, Inc 147
Solvay Process Division, Allied Chemical Corp 69
Steel Plate Fabricators Assoc 179
Swenson Spreader & Mfg. Co 185
Sylvania Electric Products Inc 134
Syntron Co 172

Tarrant Mfg. Co 170

Unimasco, Inc 143
Union Metal Mfg. Co 130

Vapor Blast Mfg. Co 191
Vermeer Mfg. Co 165
Volkswagen of America, Inc 122

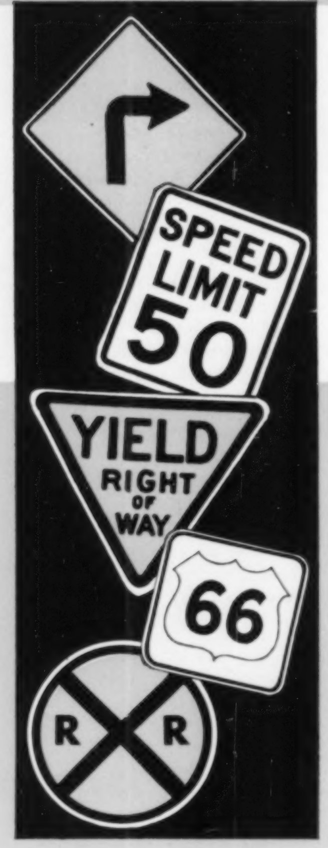
Wallace & Tiernan Inc 68
White Diesel Engine Div 152
Whiting Co., E. B. and A. C 50
Wide-Lite Mfg. Co 127
Wild Heerbrugg Instruments, Inc 141
Willys Motors, Inc 62

Young Spring & Wire Corp., Equip. Div 159

Zep Mfg. Corp 160

Stormcote®

maintenance program proves . . . FLEX-O-LITE Best...



Weatherometer and Fadometer tests demonstrate Extra Life and Reflectivity of FLEX-O-LITE SYSTEM

"Permanized" with amazing new STORMCOTE® protective coating, FLEX-O-LITE Reflectorized Signs reveal a life expectancy of five or more years with effective day and night brilliance and reflectivity under varying weather conditions, confirmed in authenticated weatherometer and fadometer tests (note illustration).

STORMCOTE® adds years of useful service to the normal life expectancy of signs . . . assures maximum weather, water, dirt, and wear resistance for greater economy and satisfaction, particularly when FLEX-O-LITE materials and our recommended processing system are employed.

Isn't this the kind of economical performance, safety factors and long life you want in your reflective traffic signs and markings? Wire, write or phone for complete details.

FLEX-O-LITE TRADE MARK REG. U.S. PAT. OFF.

FLEX-O-LITE MANUFACTURING CORP.

8301 FLEX-O-LITE DRIVE, ST. LOUIS 23, MO. • PARIS, TEXAS
FLEX-O-LITE OF CAN., LTD., P. O. BOX 216, ST. THOMAS, ONTARIO, CAN.

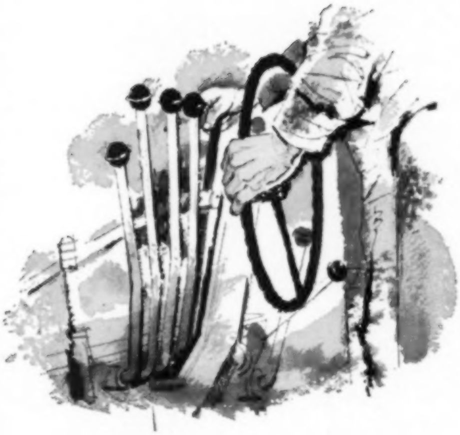
MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH AND MEDIUM INDEX SIGN BEADS

FLEX-O-LITE PRODUCTS

- **#831** LEAD-FREE High Index of Refraction Beads.
- **UB 68** LEAD-FREE Medium Index of Refraction Beads and Sign Kits.
- **Type H** Safety Spheres with ultra-high brilliance.
- **Traffic Beads** — Free-flowing, Moisture-Proof and Standard.
- **All-Weather Airport** Runway Beads.
- **Sign Bead Dispensers**—Automatic and Semi-Automatic types.
- **Traffic Bead Dispensers.**

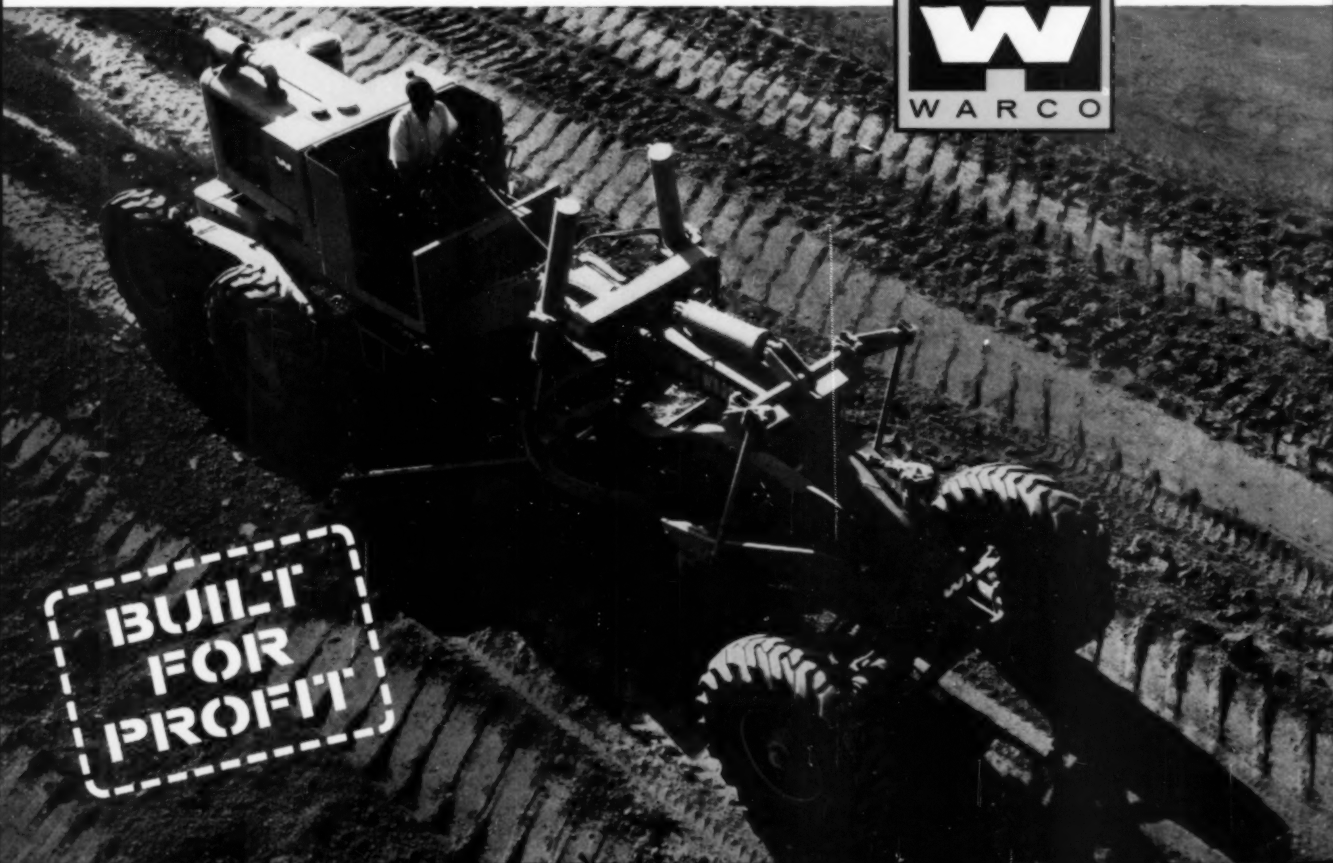
Hydraulic power makes it easy

Ease of operation, positive control, convenience — for years these and other operator suggestions have been a major factor in the design of Huber-Warco motor graders. A prime example is Huber-Warco's complete Hydraulic Control System. It eliminates fatigue, gives the operator instant positive power, allows him to operate two or more controls (all within easy reach) at once. Hydraulic power means no shoving or tugging at controls, no fear of levers kicking out of position since any cylinder can be locked in any desired position. Finer control of both heavy and the finest finish grading is assured. Best of all, Hydraulic Control develops the skill and confidence so necessary for big production. See the Hydraulic Controls as well as the other outstanding features you get in Huber-Warco motor graders and check Huber-Warco's full line of 3-wheel and tandem rollers, and maintainers at your Huber-Warco distributors soon.



HUBER-WARCO COMPANY • MARION, OHIO, U.S.A.

HUBER
W
WARCO



Versatile Michigan does work of two loaders, a crawler and a specialized snow removal unit; brings year-around economies to a city of 19,000. A typical saving:

2/3 cut in snow removal time

At least 5 important savings have been realized by the City of Cudahy, Wisconsin, since purchase of their 77 hp Michigan Tractor Shovel 4 years ago.

ONE, the Model 75A Michigan Tractor Shovel and its one operator have replaced two less powerful rubber-tired loaders and two operators.

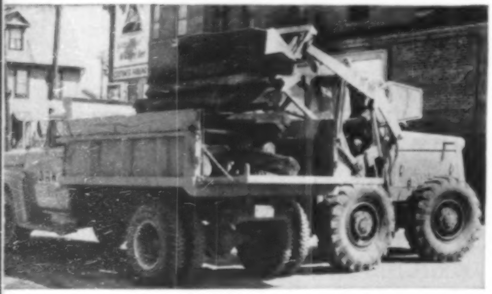
TWO, a 15,000 lb class crawler-tractor, formerly needed for road grading, has been retired to non-travel duty on the Cudahy landfill.

THREE, Michigan's go-anywhere 26 mph mobility has eliminated truck-and-trailer transportation.

FOUR, the Michigan, equipped with snow blower, does the job of a highly-specialized, summer-idle $15,000 to $17,000 rig.

FIVE, the Michigan, with standard 1¼ yd bucket, pays off, both winter and summer, by speeding all types of stockpile, highway-repair, other loader jobs.

Photo above shows typical summertime taxpayer service . . . picking up broken walkway concrete. Other assignments of this type include pickup of earth, brush, rubbish . . . digging pit-run for landfill cover . . . loading stockpiled sand, gravel, and stone (average: 10 tons in six passes, three minutes). Michigan also plays major role in highway construction: levels grades . . . spreads fill . . . tows rubber-tired roller and pulvi-mixer.



In winter, they replace the Michigan bucket with an easy-to-mount 9½ ft V-blade, plow alleys, occasionally city streets. To clear the 13¼ miles of alleys located within the city's boundaries takes the four-wheel-drive Michigan about eight hours. Machine's high-traction tires need no chains.

Alleys cleared, Michigan next removes curb-windrowed snow from main traffic and business routes. Here, for speed, the blower is used. This attachment consistently blows 4 cu yds into a truck in only 30 to 60 seconds! Time is "less than one-third" that required for bucket loading, according to Melvin Fiss, Cudahy Director of Public Works. "Another advantage of the blower," says Fiss, "is that it chops the often-icy snow so you get more than twice the weight into a truck-load as with straight bucket-loading."

The City also uses the blower-equipped Michigan in undeveloped areas to throw windrowed snow 40 to 50 feet away from the road. This eliminates need for trucks and truck loading.

You can fit *your* 1 to 2¼ yd Michigan, new or old, with a blower, V-type, or straight plow. See your Michigan Distributor for details on this investment in year-round money-saving versatility. Cudahy officials did. In 1960, the City bought its second Michigan, another Model 75A. Results: the savings you've just read about are now doubled!

CLARK® EQUIPMENT

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2495 Pipestone Road, Benton Harbor 30, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario